THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—37TH YEAR. SYDNEY, SATURDAY, JULY 15, 1950. No. 3.

CONGRESS NUMBER

Australasian Medical Congress (British Medical Association)

BRISBANE, MAY—JUNE, 1950

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President's Address.

By ALEX. P. MURPHY,
Brisbane.

THE British Medical Association, I refer to the Parent Body, enjoys the honour of having as its Patron His Majesty the King. Hence it is my pleasing duty to request that Your Excellency convey to His Majesty expressions of loyalty and affection from this gathering.

For your own patronage and opening of this congress you will be fittingly thanked by the President of our Federal Council.

To you, Mr. Premier, and to you, my Lord Mayor, we acknowledge a debt of gratitude for ready cooperation and generous assistance which go far towards making this Seventh Session a success.

On behalf of the Queensland members I desire to extend a hearty welcome and the hand of friendship to our visitors, especially to those who have come from beyond our shores.

I find myself at a loss to know how adequately to express my deep appreciation of the great honour conferred on me by my appointment as President of an Australasian Medical Congress, an honour that can fall to the lot of so few. The confidence of one's colleagues is a priceless possession, but it involves a feeling of great responsibility, coupled with an earnest hope that that confidence has not been misplaced.

And now, in spite of the Hippocratic admonition that the physician should refrain from giving public lectures, with which at the moment I find myself in complete accord, the duty devolves upon me of delivering an address. Choice of a subject proved elusive until recently there came to my mind a verse, written to the best of my belief about fifty years ago:

> But we brought forth and reared in hours
> Of change, alarm, surprise—
> What shelter to grow ripe is ours?
> What leisure to grow wise?

And as the first half of this much vaunted twentieth century had just sped by on winged feet, it seemed that these lines were singularly appropriate to its passing, of which a brief review might provide food for reflection.

History will surely record it as an amazing period, for it has produced a bewildering profusion of scientific marvels, outstanding being the conquest of the air, wireless telegraphy with its many ramifications such as radar and remote control of aircraft and missiles, and the splitting of the atom. It has seen two wars on a scale never believed possible, the last threatening extinction to humanity, and has brought radical changes in long-established order.

In medicine, the special concern of this congress, advances have been truly remarkable. In the preventive field passive immunity by antitoxin, but better still the establishment of active immunity by vaccines and toxoids, has provided protection from a great number of diseases of which diphtheria, typhoid fever, tetanus and tuberculosis are perhaps the most widely known.

Governments have become increasingly conscious of their responsibility in regard to preserving and promoting the health of the community, recognizing that the medical profession alone cannot organize and enforce the nation-wide discipline necessary to make control of disease effective.

First with sulphonamide drugs, next with penicillin, and now with products of other members of the fungus family, established infections, hitherto frequently fatal, have been brought under control and at times reduced almost to insignificance.

Vitamins and hormones have been identified, their chemical structure unravelled, deficiency states due to their inadequacy recognized, and, wonderful to relate, in many instances corrected with synthetic products of the laboratory.

Insulin has granted a new lease of life to diabetics, and has conferred successful motherhood on female sufferers whose lives were previously jeopardized by pregnancy.

Hæmatology has revealed the Rh factor, and the curious patterns it weaves; pernicious anæmia is satisfactorily controlled; and blood transfusion has been brought to such a pitch of perfection that it is an everyday procedure, saving countless thousands of lives.

Until the middle of the nineteenth century the physical ability of the surgeon's assistants to restrain the patient's struggles was the main factor in the performance of operations. The ingenious French surgeon Dupuytren made insulting remarks to his female patients in the hope that they would faint, whereupon he sought to operate before they regained consciousness. This method of producing anæsthesia was credited with some success, but would, I fear, prove sadly ineffective with the modern miss. The anæsthetic properties of nitrous oxide, ether and chloroform were then discovered, and these substances proved an immeasurable boon to mankind.

How thorny is the path of the pioneer is revealed by the fact that when Sir James Simpson introduced chloroform into his obstetric practice, he was violently assailed by the clergy for daring to abolish the pains of labour that the Lord had decreed that women should suffer. A knowledge of Scripture, however, enabled him to silence effectively his clerical critics, for he referred them to the twenty-first verse of the second chapter of the Book of Genesis, where it is set out that in the first operation recorded, that of removal of a rib, anæsthesia was employed, for "the Lord God caused a deep sleep to fall upon Adam".

Ether, chloroform and nitrous oxide held the field until the arrival of this magical period, when various other gases, and drugs administered by mouth or by local, spinal or intravenous injection came into use; further, with the aid of curare, the South American Indian arrow poison, even the responsibility for breathing has been transferred from patient to anæsthetist, the surgeon being permitted to invade the thorax with impunity.

It is true that Röntgen discovered the rays which bear his name in 1896, but it was only in the twentieth century that they came into universal use in the diagnosis and treatment of numerous conditions.

Surgery, especially in the hot-house of war, has made almost incredible strides. With the aid of the anæsthetics mentioned lungs are removed, the course of the circulation in the defective heart altered, and portion of the aorta, the greatest artery in the body, excised and replaced by a graft taken from another member of the human species. Can it be that we are but a short step from the complete replacement of a diseased vital organ by a healthy one?

On occasion swords have been fashioned into ploughshares. The chemists, having laboured to produce lethal gases, took their mustard variety, and replacing a molecule of sulphur by a molecule of nitrogen, evolved the nitrogen mustards, which are injected directly into the blood and are proving of great value in the treatment of certain diseases of that mysterious territory the reticulo-endothelial system.

But one of the greatest though least appreciated triumphs has been the victory over malaria, that age-old enemy of man. It has been said that it has been responsible for more deaths in the world than any other agent, students of history have claimed for it a major part in the decline and fall of the Roman Empire, and war and malaria have ever proved loyal and effective allies. Its final subjugation played no small part in determining the outcome of the war in the Pacific and in preventing invasion of this country.

The research which led to this was carried out in this State at the army experimental station at Cairns, and the man to whom all the Allies, but especially Australians, owe a deep debt of gratitude is himself an Australian, Neil Hamilton Fairley. But for him and his work it is very doubtful if you and I would be here tonight.

The list of achievement might be extended almost indefinitely, but enough has been said to suggest that man may now be finding it extremely difficult to die. In support of this is the admittedly large number of aged people in the community today, but they had reached the peak of their activity before the full pace of this half-century had been attained.

I fear that in the not-too-distant future the necessity for the study of geriatric medicine will be by no means so pressing. Nature exacts her toll from man's ingenuity, and cardio-vascular disease has shown a staggering increase in the past twenty-five years; moreover, it is claiming its victims at an ever earlier age. Medical men enjoy the doubtful privilege of providing the highest occupational mortality from coronary arterial conditions, so an attempt to uncover the cause of this should not be without interest.

When such an increase in the mortality from any disease is first disclosed, a critical survey must be undertaken before it is accepted as proven. For instance, it may be due to improved diagnostic methods; to a greater awareness of the condition with consequent over-emphasis; to a change in nomenclature, or some other falsifying factor.

In this case it has been clearly demonstrated that the increase is real, also that it is practically limited to those people whose occupations demand constant mental activity associated with tension and responsibility, and into this category the doctor naturally falls.

What, then, has happened in the past fifty years to produce this unprecedented wear and tear in blood-vessels? I submit that the development of man's discovery of how to generate and harness electricity provides the explanation. This has brought into being the telegraph, the telephone, wireless communication and the internal combustion engine, with their cumulative impact on the former tranquillity of life.

How has the doctor fared? In the earlier part of this half-century the call to the sick bed usually came by messenger on foot, horseback or bicycle. The horse and buggy doctor rode, drove or was driven to and from his patient, the while he meditated or even dozed. The extent of his practice was limited by the rate of communication and transport, and to each problem he was able to devote reasonable consideration. The physical stress is claimed to have been great, but this is debatable and of little import.

How this has changed! Day and night he is at the mercy of the telephone, especially the automatic siren,

whose repeated strident summons defies disregard. Only the tactics of Ulysses might save him from it. His conveyance is a motor-car, which almost invariably he has to drive himself, often through the streets of a crowded city, with features set, muscles taut, and disaster lurking at every corner, so that should he intend his mind on the troubles of his patient he is apt to find himself in the queue at Charon's ferry.

Speed thus permits contact with far more patients than formerly, and periods for reflection between tasks have been abolished.

He is harassed by scarcity of hospital accommodation. It is almost easier for the camel to perform the proverbial feat of the needle's eye, than for a bed to be found in a private hospital for a patient in an emergency. Public hospitals are overcrowded, technical staff is inadequate, and domestic help all but non-existent.

And so to overwork are added frustration and its sequel exasperation.

Medical literature has attained colossal proportions. Owing to rapidity of progress, text-books are out of date in many respects before they leave the press, and the doctor, struggling to keep abreast of medical knowledge, must choose between being drowned by the weight of his conscience in an ocean of journals, or, in order to survive. frankly abandoning the attempt, and so drifting into a Sargasso sea of mental stagnation.

Medical men have no monopoly of these conditions, and their lead in the mortality statistics mentioned is but a short one. Members of other professions, business men, public men, have been similarly affected by air mail, trunk and trans-ocean wireless telephony, stenography and the "Dictaphone".

The immoderate use of tobacco, engendered by unease, lays stress on the vessels of those whose vascular inheritance is not flawless. The cry is "cigarettes soothe my nerves"; yet all they really do is provide occupation for restless fingers, while laying a varying burden on heart and arteries.

Yet another factor is noise. Everywhere radio sets blare and shout, in over-dramatization of everyday situations in serials notable for their lack of educational value; motor traffic, tram-cars and aeroplanes add their quota to the din, which in cities is almost unceasing, and to which urbanization is exposing an ever-increasing percentage of the population. Recent animal experiments have shown that noise alone can derange the mind and even lead to death.

The outcome of all this is an incredible multiplication of the mental exercises—acrobatics might be a better word—that now have to be performed in a day which, however, still contains but twenty-four hours. Each mental reaction provokes a vascular reaction of greater or lesser degree according to the individual, and thus wear and tear on heart and blood vessels are enormously augmented.

The psychological harvest is a state of tension, restlessness and irritability, leading to a vicious circle. Passions are readily aroused, and reason and tolerance are rare. The solace of natural sleep is denied many, who seek a synthetic substitute. It would be of interest to know the actual increase in the consumption of hypnotic drugs during the past twenty-five years, yet artificially induced repose is but a poor deputy for natural sleep.

The best defence against the impact of this age would appear to be inheritance of a faultless cardio-vascular system, but as we did not select our parents we have been afforded no voice in this. Surely Shakespeare, that master of prophecy, envisaged this era when he wrote: "Farewell the tranquil mind; farewell content."

What remedy, then, can be found for the physical and psychological debacle of the twentieth century? The answer is provided by the word leisure, yet extremes are difficult to avoid and dangerous when they develop. Today the brain worker is starved of leisure, that time for unhurried thought, which is his life blood, while the manual operative is surfeited with time which he has not learned to employ to his own best advantage, or to that of the society of which he is a unit.

The former cannot produce what he would wish, while the latter, like the Romans of old, is forced to demand more and more spectacles or distractions, instead of doing something which develops his intelligence and initiative. Admittedly all work and no play is thoroughly undesirable, but the converse can make the day desperately hard to endure. Both mental and manual worker, the one through denial of opportunity, the other through lack of education, may with justice echo the lament of the dying Cecil Rhodes: "So much to do; so little done."

If you consult "The Shorter Oxford Dictionary" you will find leisure there defined as "freedom or opportunity to do something". This definition is preceded by a symbol indicating that it is obsolete, and at once invites substitution of "freedom or opportunity to watch someone else do something" as a modern version. Mark Twain said that humour was out of place in a dictionary, but I would add that discernment is unexpected and refreshing in such a volume.

Some twenty-five years ago, in an essay entitled "Work and Leisure", the author indicated that reformers hoped that by efficient social organization and perfected machinery, all men and women would be able to have an amount of leisure equal to that then enjoyed by the privileged few. "Nobody", so he wrote, "in that golden age will need to work more than 4 or 5 hours a day." There is a familiar ring about that phrase "golden age", and it must be assumed that the suggested minimal effort accompanying it endeared it to its recent advocates. The author, however, immediately turns iconoclast, and with cold logic trenchantly removes all reasons which might support the qualifying adjective "golden".

May I be permitted to draw an analogy between a storage battery and the brain? If the former is to provide efficient current at call, and to have an average life, it must be charged at intervals governed by the drain upon it. Should this precaution be omitted and the discharge prove heavy and continuous, the battery will become exhausted. It may, of course, be recharged, but if such treatment is continued its plates will be affected and the instrument ruined long before its time.

So with the brain. Leisure to it is as the period on the charging board to the battery. Should nerve cells be repeatedly activated and no adequate respite offered them, their performance must become less and less effective, accompanying vascular reactions increase, and finally structural changes develop in blood vessels and heart akin to those in the battery, and the individual prematurely fulfils the common destiny of flesh.

Leisure in its true sense is not synonymous with indolence. The manner of its expenditure should be congenial, but on the whole it must be productive or it may prove worse than useless. The outcome should be a sense of gratification or enhanced self-respect, arising from the belief that some contribution, be it however small, has been made to knowledge, or to the happiness or welfare, not only of the individual but of his fellows. I have an intense conviction that without a high degree of self-respect and mutual esteem no community can hope to survive, and that the amount of leisure it takes and the manner in which this is expended may determine its fate.

Lord Lister, called to Balmoral to attend Queen Victoria, opened a large abscess under her arm. Unfortunately the pus did not come away freely, and the Queen remained ill, feverish and in pain. Lister, as was his custom when confronted by a difficult problem, went for a long solitary walk, and during his reflections it occurred to him that portion of the rubber tubing of his carbolic spray apparatus might permit continuous escape of the pus. He returned to his patient, cut a piece of tubing from the spray and inserted it into the wound, which to his "inexpressible joy" then drained freely. Thus in a brief period of leisure, permitting unhurried thought, was conceived the method of wound drainage used by surgeons to this day.

Mark well Lister's own words "inexpressible joy". Joy and exaltation are inevitably precursors of serenity of mind, and if opportunity afforded by leisure to acquire this is offered to all, it should go far towards ensuring a normal span of life for the many, and if it is true that

"wars arise in the minds of men", Armageddon should be far off, for how could turmoil be born of tranquillity?

And so I have sought to show, I fear in halting fashion, that owing to the pace of life in this electrified age cardiovascular disease is on the march, that its victims in the main are brain workers in their prime, people whom Australia with her sparse population can ill afford to lose, and that a remedy—remedy is perhaps too ambitious a word—a palliative may lie in leisure, sensibly apportioned and properly employed, in point of fact my poet's "leisure to grow wise".

How greatly to be envied are those few who, though reared in these "hours of change, alarm, surprise", have been able to possess themselves of this celestial serenity of spirit; so few, indeed, that of them alone, or almost alone, may it be said in the words of Coleridge:

> For they on honey dew have fed
> And drunk the milk of Paradise.

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Religious Services.

AT Saint John's Cathedral the service on the morning of Sunday, June 28, 1950, took the form of a choral Eucharist. Members of Congress, wearing academic dress, occupied seats that had been reserved for them. The procession of clergy was headed by the choir and included the Very Reverend W. E. C. Barrett, Dean of Brisbane, and the Most Reverend R. C. Halse, Anglican Archbishop of Brisbane. Included among the collects was a special prayer for "physicians, surgeons, nurses and chaplains". The sermon was preached by the Venerable Archdeacon Hardie, M.A., B.D. He said that one of the striking things about Jesus was His insight into the realities of human nature. The preacher wished to draw attention to the perception by Jesus of the integrity of the human personality—the fact that man was a whole, an entity entire, within which each factor, physical or otherwise, was in intimate and essential relation with every other. That insight was revealed by the sayings of Jesus when He was confronted by some particular situation, and the situations which called forth His perceptive remarks were characterized by the presence of bodily or mental sickness. Good health for Jesus was wholeness. To heal was not primarily to patch up a lesion in a physical structure, but to restore the normal integrity of the entire human person. The course of medical science, as far as a layman might apprehend it, was in one aspect the story of the gradual discovery of that truth. The perception of the interdependence of the different parts and functions of the body had once been a discovery of revolutionary importance and had developed only gradually. The conception of the unity of the mind was of more recent date. Mental processes were now known not to be disparate, but to be only different aspects of the unitary activity of conscious mind. The preacher then referred to the still deeper mental unity revealed by study of the subconscious and unconscious mind and pointed out that the conception of the unity of the mind had been reached through the study of pathological mental conditions. But it was evident that the unity of the physical organism and the integral nature of mental life were not absolute and separately self-contained. They were relative to a wider unity which comprehended both. The unity of body-mind was not a closed system, but depended for its existence and balanced functioning on its place in a still higher unity. When Jesus said "Thy faith hath made thee whole", he meant that the wholeness had been restored by a power outside the natural unity of personality. It was a power for which no better name could be found than "spiritual"—it was neither physical nor psychical. The actual concrete reality with which man was in touch when he dealt with a human person was a spiritual entity—not a body, not a mind, nor even a body-mind. The spiritual entity alone was real in an absolute sense; it broke down under the analytical scrutiny of thought into the abstractions known as body

and mind. The spiritual entity, according to the Christian view, was itself not a closed system, but open towards and dependent on the power of the Supreme Being. In most cases what the physician or surgeon did was largely to remove obstructions from and add strength to a recuperative power that was already acting for the restoration of physical and mental wholeness. If disease was only a symptom of schism in the psychosomatic unity, if physical and mental recuperation were only specialized manifestations of divine power in general, if there was a healing power dependent for its application on the patient's own attitude of faith in divine power—and the preacher held that these things were true—it followed that the practitioner of medicine, who was not also a practitioner of the spiritual life, was out of touch with the ultimate source of all curative power. The practitioner who had no faith in God was working with a defective technique.

At Saint Stephen's Cathedral Solemn High Mass was celebrated on Sunday, June 28, 1950. Members of the medical profession attended in academic dress and occupied seats which had been reserved for them. Mass was celebrated by the Reverend R. C. W. Shand, the Reverend N. Grundy was deacon, and the Reverend J. Bennett, subdeacon. The Most Reverend P. M. O'Donnell, Roman Catholic Coadjutor Archbishop of Brisbane, presided and preached the sermon. He took as his text the following words from Saint Matthew, xxv, 35-40: "For I was . . . sick, and you cared for me . . . . Whereupon the just will answer, Lord, when was it that we saw Thee sick and came to Thee? And the King will answer them, Believe Me when you did it to one of the least of my brethren here, you did it to Me." He said that when Jesus Christ ministered to the souls of men, He frequently healed their bodies. To the Church and its priesthood He had committed the continuance of His work for souls, but it was the privilege of the members of the medical profession to perfect themselves in the love and sympathy of the Lord and Master in ministering to the sick. Contemplation of the marvel of organization of the human body inspired reverence and awe. By divine grace the soul of man became the dwelling of the Most High and the human body acquired a new and altogether exalted dignity as the temple of the Holy Ghost. In every human body the medical practitioner would behold an afflicted Christ. The medical profession had acquired an eminence in efficiency and skill, previously unknown, and care was needed lest the scientific approach might obscure the human touch and the patient be regarded not so much as a human personality but somewhat impersonally as a case. The preacher went on to discuss the moral law and referred to moral principles, which were the laws of God and of Nature, eternal and immutable. On their observance depended the welfare of mankind, both eternal and temporal. An example of fallacious sentimentalism which might cloud the moral issues was euthanasia or mercy killing. The taking of human life to put an end to pain had no sanction in the moral law. Adherence to moral principles had proved its utility even from the human standpoint as an incentive to research. And even from the purely natural angle it was common knowledge that suffering could have a refining influence on human character and behaviour. Members of the medical profession had merited well the gratitude of the community. Their true reward on earth was found in the knowledge that they had rendered the highest service to their fellow men.

At Saint Paul's Presbyterian Church a special service was conducted on Sunday, June 28, 1950, by the Reverend R. E. Pashen, President of the Queensland Council of Churches, assisted by the Reverend B. Frederick (Methodist) and the Reverend T. C. Warriner (Baptist). Members of Congress were present in academic dress. The sermon was preached by the Reverend R. E. Pashen, who spoke on the ministry of healing. He said that every member of the church had a ministry to perform in the daily round of life, and this was particularly true for those connected with the work of healing. Even the casual reader of the Bible could not fail to notice the part which the servants of God had played in the healing of human ills. It was in the New Testament that the record of healing became most prominent. Saint Luke recorded the whole purpose of Christ's coming as Jesus quoted it Himself from Isaiah: "The Spirit of the Lord is upon me, because He hath anointed me to preach the Gospel to the poor; He hath sent me to heal the broken hearted, to preach deliverance to the captives, and recovering of sight to the blind, to set at liberty them that are bruised; to preach the acceptable year of the Lord." The Master of men came as a healer who delivered from more than the ills of the body. His healing yielded a mastery even over death itself. The preacher referred to the growth of medical science, to medical missions, to the development of hospitals and ambulance service and to Red Cross work. He spoke of the Christian spirit of love and service. He concluded by saying that he hoped that the Spirit of God would guide and inspire men to perform their ministry, whatever it might be.

A special service for Jewish members of Congress was held at the Synagogue, Brisbane, on Saturday, June 27. In the course of his sermon Rabbi A. Fabian said that Judaism knew no distinction between religion and ethics, nor between religion and hygiene. The holiness of the human personality was the aim of biblical Judaism. Humanity as a whole had suffered most frightfully in the recent years of catastrophic upheaval and was afflicted with physical and mental ills unknown in such magnitude during the whole history of man. The most concentrated and sustained efforts of all men of good will were needed to make even slight advances on the road to recovery. The medical man of today stood in the forefront of that fight and he could have no better guide than the time-hallowed biblical principles of the dignity and sacredness of every human life.

Inaugural Meeting.

The seventh session of the Australasian Medical Congress (British Medical Association) was formally opened at the City Hall, Brisbane, on the evening of May 29, 1950, by His Excellency Sir John Lavarack, K.B.E., C.B., C.M.G., D.S.O., Governor of Queensland, in the presence of the Premier of Queensland, the Right Honourable E. M. Hanlon, and the Lord Mayor of Brisbane, Alderman J. B. Chandler.

His Excellency Sir John Lavarack welcomed members of the congress to Brisbane and spoke of the value of congresses to members of the medical profession. He referred to the part taken by doctors in two world wars and to the need for understanding and cooperation if further conflicts were to be avoided. He hoped that the congress would be a success and that the discussions would be useful to the participants and in the long run helpful to the community. He understood that the next session would be held at Melbourne in 1952 and hoped that nothing would happen to interfere with that event.

President's Address.

Dr. Alex. Murphy, the President, delivered his address (see page 69).

Vote of Thanks.

Dr. A. J. Collins, Vice-President of the Federal Council of the British Medical Association in Australia, apologized for the absence of Sir Victor Hurley, the President, who was unable to be present owing to illness, and proposed

a vote of thanks to Sir John Lavarack for having declared the congress open. He thanked His Excellency on behalf of Sir Victor Hurley, on behalf of the Federal Council and on behalf of every member of congress. Doctors led quiet lives and carried on their work in an unostentatious way, but every two or three years they came together to hold a congress to exchange views on medical problems —to survey, to stabilize and to systematize their knowledge. It was a matter of gratification that persons in high places, such as His Excellency, became interested. Sir John Lavarack had displayed his interest by becoming patron of the congress. Dr. Collins said that among members of congress were many doctors who had served during the recent war under His Excellency and they were on that account the more grateful to him. The vote of thanks was carried with enthusiasm.

Public Lecture.

The public lecture was given by Sir John Medley, Vice-Chancellor of the University of Melbourne, who took as the title of his address, "Is Medicine a University Subject?" Sir John Medley said that the title of his address was provocative in a sense and that it asked two perfectly legitimate questions: (i) whether medicine was, in fact, a university subject; (ii) whether under modern conditions medicine was best studied in connexion with a university. There were two easy answers to the questions. For example, nobody could be registered as a medical practitioner without a medical degree; and it could be said that of course medicine ought to be a university subject —it had been since universities in any real sense began. Universities had begun by the loose amalgamation of schools of medicine, theology and law for their mutual improvement. Moreover, it could be agreed that medicine had certain historical rights of primogeniture. But the first point to be borne in mind was that neither medicine nor universities were static things, and it was not impossible that the demands of modern society might be imposing a desirable separation between medicine and the university. Sir John Medley enumerated the current criticisms of the medical course, many of which were mutually contradictory. The amount and type of criticism gave rise to some suspicion that the university connexion was not altogether satisfactory; but that suspicion might be diluted if it was remembered that exactly the same troubles arose in connexion with the university itself. The university should accustom itself to criticism from the community which it desired to serve; without the interest of which such criticism was a proof, progress was impossible. Even more, the community should accustom itself to criticism from the university, for one of the functions of a university was to act as a factory for criticism. Both sides should learn that there must be no resentment when criticism was neither ill-informed nor malicious, and that close cooperation to one end was possible only when there existed complete mutual confidence and understanding. But the situation was altered when the connexion between the medical profession and the university was squarely considered. The connexion was intimate; the university was the sole gateway from the schools to the medical profession; the medical profession constituted a link between the university and many sections of the community which it would not otherwise touch. But the medical school within the university was a body of particular character; it consisted entirely of full-time students whose work early brought them into contact with the raw material of their chosen profession. The conditions developed in the students a valuable *esprit de corps*, but at the same time tended to isolate them from university life. That isolation was emphasized by the high percentage of part-time teachers in medical schools, and by the physical impossibility of combining clinical and university activities. When those factors were taken into account, and it was remembered that no medical course could be devised without a great deal of technological study, which as carried out at the present time could not be described as a true university course, it could be argued that medicine was only partially a university subject under present conditions. Moreover, the early dismissal of medical students from what could be described as Utopia made the acquisition of the humane spirit more or less impossible to the ordinary person. Neither the universities nor the professions could ignore the fact that they were lagging behind the needs of the times in the provision of certain old-fashioned qualities such as wisdom and understanding. In that connexion Sir John Medley discussed in some detail a symposium recently published in *The Listener*, based on Sir Walter Moberley's book "The Crisis in the Universities". The theme, stated in Moberley's words, was that the universities were not rising to the height of the times; they were producing people who, whilst technically competent, were incapable of playing their full part in a modern community, although the need for them to do so was imperative. A university was not static, nor should it be too easily affected by transient demands from without; as had been said in the symposium, it should be neither an ivory tower nor a service station. It must behave like a living organism, not a machine. It could change society and be changed by it. But it must have some idea of its own ideals and its own ambitions. Sir John Medley deplored the popular cry that universities should produce leaders; he said that in his opinion no educational process could create the combination of qualities that marked a true leader. He asked whether, if such a process was possible, the universities were to confer suitable degrees upon a long succession of fulminating Führers. In his opinion what was really required by democracy was as large a number as possible of intelligent and educated followers, who would recognize a right lead and persuade others to follow it. Such people should come from the ranks of graduates above all. To make it possible to create such an attitude, universities needed more resources, much more staff, much less pressure for the attainment of a purely material end. The university should act as a brake more than a leader. Society attached increasing importance to the learned professions, but tended to overemphasize the importance of the technological aspects of professional activities. The process was accentuated by the perpetually closer relationship of the professions with industry. The medical profession particularly could not afford to countenance that kind of development to the exclusion of others. At that point it was possible to answer an emphatic "yes" to the first of the two questions asked at the beginning of the address.

Sir John Medley then referred to the university's answer to society's demand for a rapid increase in the scope, the quality and the quantity of the learned professions. The answer was that the demand was in accordance with university tradition, but that the university reserved the right to point out certain obvious dangers, and to oppose when necessary what it believed to be not in the best interests of the community. As to leadership, its qualities should emerge as a by-product of a man's training, if he had them. Sir John Medley deplored the university with a "tag" on it, which he considered not a university at all; he instanced Catholic universities, Protestant universities, technological universities *et cetera*. If a university did its work properly it would turn out people with all kinds of beliefs; it existed to provide foundations of belief, not directives for belief. If it refused to face its task, there would be an end to democracy. A university existed to counteract the tendency to compartmenting of study, with resulting compartmenting of minds. One might instance general courses on the United States pattern; but it was doubtful whether universities could afford either the time or the money for the extensions necessary. Sir John Medley then referred to a book by Dr. der Vanivar

Bush entitled "Modern Arms and Free Men", in which the need for change in medical education in the United States was stressed. Dr. Bush had pointed out that most of the main advances in medicine had come from outside the medical profession, from marginal areas dominated by other disciplines. Sir John Medley said that as in the United States, so in Australia, time was the essence of the contract. The medical course in Australia was shorter than that of the United States, but still a long course from the economic standpoint. He did not believe that there was a high wastage of ability in Australia, and he doubted whether the new Commonwealth scholarship scheme, which was to be introduced in 1951, would bring an increased rush into the medical profession. He hoped that it would not, in view of the imperfect conditions of training in late years. There was an inevitable pull between the universities and the medical profession. The distinctive character of what ought to be the university contribution was to lay foundations in accordance with facts, and under present conditions universities should stress the growing uniformity of knowledge. Sir John Medley mentioned the need for universities to do research work. He said that perhaps work in watertight compartments was unavoidable at certain stages; but if the way to professional life lay through a series of watertight compartments, both the universities and the professions were failing to do their job. What was needed was a higher degree of mutual understanding and occasional compromise. By way of remedy, Sir John Medley mentioned better and more imaginative teaching in the schools. He also referred to the need to make university teaching more attractive to first-rate men, which was not a question of salary only, but also one of time, and paid a tribute to those who had altruistically shouldered the burden of their own practices and of teaching in their medical schools. But such people would agree that insufficient medical research had emerged from the Australian schools. Research was an essential part of the university pattern. Sir John Medley believed that the technological and fundamental years would have to be separated. He advocated a period of compulsory residence in a college, a hostel, a hall of residence, preferably not situated in a metropolitan area, for all students aiming at the highest professional qualifications. The period need not exceed one year, and would be a prerequisite for admission to the technological years. The time was over-ripe for the overhauling of the content of many courses; but a dictator of brutal type would be needed to achieve the necessary results. Somehow time must be found during one year for the modicum of leisure which was essential. Sir John Medley referred to the valuable work done by the Mildura Branch of the University of Melbourne during its three years of existence, and gave the reasons why it had come to an end. The reasons had nothing to do with failure on its part, and many of those who had come from Mildura were clamouring for a continuance of the types of extracurricular activity organized there, which were having an effect on the actual spirit of the university. Sir John Medley thought it likely that when those students graduated, their standard of humanity would be higher than that of the other students. He believed that his suggestion would provide some relief for overcrowded city sites, and that in the long run the total costs would not be much greater than those involved in exclusively metropolitan developments. An increase of at least one year in courses would be necessary; but specialists would insist on that in any case. Sir John Medley believed that it would be possible to devise a course of one year, which, given the right physical environment, might set an example to the educational world. He finally made a plea for an objective approach to the problem by both the universities and the learned professions.

Plenary Session.

DR. ALEX. MURPHY, the President of Congress, who opened the Plenary Session, said that the very important subject of tuberculosis had occupied the attention of several previous sessions of congress, but that the prevention and ultimate eradication of that disease at last seemed to be possible, and the steps necessary for that purpose were now solely in the hands of the administrators. They had decided to turn to another disease on the present occasion—to rheumatism, a disease which licked the joints and bit the heart, and whose cause was not known to him. He described how the Empire Rheumatism Council had been formed under the presidency of His Royal Highness the Duke of Gloucester, and explained that as a result of action taken at the Sixth Session of Congress at Perth in 1948 an Australian Branch of the Empire Rheumatism Council had been constituted, of which the chairman, Dr. S. A. Smith, was to preside at the Plenary Session. The panel discussion was offered as a novelty and he felt sure that, by means of that form of presentation, the interest and attention of the large gathering would be obtained.

DR. S. A. SMITH, the chairman, also referred to the importance of the rheumatic diseases in a national and public health connexion as something which at last was being recognized. Tuberculosis, cancer and heart disease had a sympathetic appeal because of their mortality; the rheumatic diseases, although they contributed to mortality (especially juvenile rheumatism), were merely stepchildren of the family. There was no doubt that the social conscience had not been very much disturbed about them until quite recently. As one writer had said, the British people had come to regard rheumatism as one of the trials that British flesh had to put up with and most households had adopted placidly the position that they had to support one member of the household, crippled with arthritis or by some of the rheumatic diseases.

Dr. Smith went on to say that, to a certain extent, the medical profession had given some tacit acceptance to that view of the public; the rheumatic diseases were regarded as uninteresting and incurable. That position was wrong and it was the Empire Rheumatism Council which had first taken steps to correct it; the Australian Branch had benefited a good deal by advice from the parent body in regard to steps the Branch might take to correct a similar impression found in Australia. In other words, said Dr. Smith, it was necessary to awaken interest, both public and professional, in the problem. Certain facts, based on statistics, were established in Great Britain and from a selection a member of the Empire Rheumatism Council had estimated conservatively that three million workweeks and forty million pounds sterling were lost annually in England and Wales because of the rheumatic diseases because of loss of time, loss of production and the cost of medical attention and drugs. Dr. Smith added that Professor Davidson, in Scotland, had estimated that 10% of the time of practitioners was occupied in the treatment of rheumatic diseases, and that in the United States of America a public health survey had recently revealed that more working days were lost owing to rheumatism than to heart disease, cancer and tuberculosis combined. It was definite that the rheumatic diseases were a menace to industrial efficiency and to production and there was a fairly strong body of opinion that rheumatism might actually be caused by certain industrial occupations; they also caused an immense amount of suffering and unhappiness in the community. The local incidence was not known with any certainty, but it was suspected to be large. Consequently, Dr. Smith said, when the Duke of Gloucester asked that a body, affiliated with the Empire Rheumatism Council, should be formed in Australia, the Australian Rheumatism Council was promptly formed. It

was apposite, under those circumstances, that the topic chosen for the Plenary Session of Congress should be that of rheumatism and its sequelæ. The time was ripe also for two other reasons; the first was that the point had just been reached for the utilization of the evidence gleaned from the medical examination of service men and women after the recent war; the other was perhaps more important and had to do with the discovery by Hench, Kendall and their associates of the effect of the adrenal steroids—cortisone and "ACTH"—on many forms of rheumatism and other diseases. He added that they had not discovered a cure but they had opened a gate into vast new and unexplored territory. Dr. Smith said that he did not feel over-optimistic in expressing the belief that, just as the discovery of the intrinsic and extrinsic factors had completely altered their conception of the essential nature and pathology of the diseases of the blood and of the blood-forming organs, so would the investigation of the hormones of the adrenal cortex bring about a somewhat similar change in their knowledge of diseases of the connective tissues.

Dr. Smith then introduced the panel assembled to answer the questions which had been submitted for discussion. The members of the panel, in addition to Dr. Smith, were Professor Lorimer Dods (Sydney), Dr. Selwyn G. Nelson (Sydney), Dr. J. H. Young (Perth), and Dr. R. F. A. Strang (Melbourne).

QUESTION 1.—*Is there a genius on the panel who can suggest a satisfactory name for what is now unsatisfactorily called "acute rheumatism" or "rheumatic fever"?*

In reply, Professor Dods expressed appreciation of the optimistic word "genius" which added a comforting qualification to the question. He suggested that if he approached the question from the point of view of the pædiatrician most of those present would agree that the labels "acute rheumatism" and "rheumatic fever" were rather misleading from many points of view—the disease was usually chronic rather than acute and was often surprisingly silent and insidious in onset, there was little or often no fever and there were often no limb or joint pains; in fact, there was no rheumatism in the original sense of the word. Apparently the word "rheumatism" implied pain and was based on the conception that pain in the limbs and back was the result of a rheum or watery mucus flowing from the brain into the affected parts. Professor Dods said that if they were to look for a new name for the disease it was just possible that the search would reveal one of the few occasions on which baptism with a proper name seemed justifiable, particularly as Sydenham's name had been applied to chorea and Still's to a certain form of rheumatoid arthritis. He went on to say that a little less than one hundred years earlier a young Yorkshire giant was rowing in the Cambridge crew; it was probably fortunate for him and for English medicine that a severe cold had prevented him from rowing in the race that year as the Cambridge boat sank in mid-stream and he was unable to swim a stroke. Four years later that young man had graduated in medicine and sailed the Atlantic, made the North-West Passage in Canada and returned to take up the position of physician to the Hospital for Sick Children at Great Ormond Street. Doubtless many realized that the young man was none other than Dr. W. B. Cheadle, who, less than twenty-five years later, had written the most outstanding and complete description of "The Rheumatic State in Children" which had ever appeared in the English language. If they were to give juvenile rheumatism an eponymic title, he suggested that they should honour that famous English clinician by speaking of Cheadle's disease or Cheadle's collagen disease; thus they would complete the trinity—Sydenham, Cheadle and Still. In spite of all that he had just said, Professor Dods felt sure that most of them would agree with him that the word "rheumatism", which had been used by the English clinicians for nearly three hundred years, was unlikely to be displaced unless the steroid hunters of the "Brave New World" could provide an exact scientific title which would be a corticoid symbol.

QUESTION 2.—*Will the panel give its views on the diagnosis of acute rheumatism in the absence of limb and joint pains?*

PROFESSOR DODS, when asked to reply by the chairman, said that the older he was the more he was afraid to make the diagnosis of acute rheumatism even when limb or joint pains were present; there were occasions when the diagnosis seemed obvious but might provide a clinical humiliation. In such a case, even the classical features might be present; they were fever, tachycardia, limb pains, raised blood sedimentation rate and usually an apical systolic bruit. It was unfortunate that there was no specific diagnostic test for the disease. Attempts to find a satisfactory test had repeatedly been unsuccessful in the past decade. Differentiation between rheumatic and non-rheumatic patients could not be established by measuring the anti-hyaluronidase titre of the serum or the response of the eosinophile cells and of uric acid-creatinine ratios to adrenaline. How were they then to diagnose acute rheumatism in the absence of limb or joint pains? Professor Dods said that at times the diagnosis could be made with ease and confidence, but that was by no means always the case. A tentative assumption might have to be made after careful exclusion of the other possibilities and assessment of the available evidence, including family history, personal history, unexplained pyrexia, tachycardia, raised blood sedimentation rate, cardiac signs and abnormalities in the electrocardiographic records, such as prolongation of the *P–R* interval or of total electrical systole, and, in the very occasional case, the presence of nodules. Unfortunately, with the exception of the nodules, none of these signs were pathognomonic.

Professor Dods summed up by saying that the moral of it all seemed to be that, when juvenile rheumatism was suspected, the child should be treated as if he had the disease, but further observation and investigation might be required before the diagnosis was confirmed; and, finally, the frightening label of "rheumatism" should always be removed from any child shown to be innocent of the disease.

DR. S. A. SMITH made two additional observations—abdominal pain might be rheumatic and the abdomen might even be opened in error; when anæmia was present and no more obvious cause was found for it, the possible rheumatic origin should not be overlooked.

QUESTION 3.—*What social class in Australia seems to bear the brunt of this disease? Is it a poverty disease? Is a history of rheumatism in one or other parent of significance?*

DR. S. G. NELSON said that careful surveys of the incidence of rheumatic fever and rheumatic heart disease in Australia had been published by Sangster, Boyd Graham, Kempson Maddox and Joan Storey in South Australia, Victoria and New South Wales respectively. From those surveys and from investigations in other parts of the world the reply could be grouped under three headings: (*a*) Poverty. It was mainly a disease of the poor but did not increase in incidence with increasing poverty; the children of basic wage earners had been affected in a higher proportion than those of relief workers during the depression. (*b*) Heredity. Joan Storey had found that 50% of rheumatic fever patients gave a history of rheumatic fever in one or other parent, compared with 35% in the control group. (*c*) Climate. It should be noted that a cold, damp climate with a high rainfall produced the greatest incidence of juvenile rheumatic fever.

PROFESSOR LORIMER DODS said that, although many authorities maintained that the disease belonged to the poorest classes, in his experience, which covered hospital and private practice, and from the reports of the almoners at the Royal Alexandra Hospital for Children, Sydney, it was not actually a disease of poverty; it was the lower "white-collar" class that bore the brunt of the disease in Australia. He described the classical picture of such a family. In the rather over-crowded home of a "frayed white-collar" worker, which was permeated by an aura of apprehensive effort to achieve some faraway ambitious goal, the children

would be urged to carry on despite minor disturbances of health such as colds or sore throats to pass examinations, to work for scholarships or to strive for business promotion in order to ease the economic strain and raise the social status. Professor Dods admitted that he had exaggerated the picture, as occasionally cases occurred among the well-to-do or even in the homes of the very rich; but the disease was extremely rare in well-housed, well-fed families, peacefully worshipping their thalamic and epithalamic gods. He added that it was well known that susceptibility to the disease could be inherited; the history of the manifestation of the disease amongst relatives—in particular, parents or siblings—might provide extra evidence towards the establishment of the diagnosis. In the 1940 report on the epidemiology of rheumatic infections in South Australia, the statement appeared that 30% of affected children had a family history of rheumatism. In their experience at the Royal Alexandra Hospital for Children, Sydney, from careful questioning of the parents, it had been established that there was a history of some manifestation of rheumatism amongst the parents or siblings in approximately 20% of the cases. In conclusion, Professor Dods said that some cold-blooded realist had said that Nature attempted to kill the procreators of acute rheumatism, though the majority lived long enough to produce children who might carry the unfortunate heritage and be born into a world of increased economic stress and anxiety because of the lengthy illness of a parent.

DR. S. A. SMITH said that he had seen a report from the United States of America which linked up with Professor Dods's emphasis on social rather than economic factors in the causation of rheumatism as it affected children; it had a predilection for disrupted and disunited households.

QUESTION 4.—*What is the usual age incidence of acute rheumatism? What is its earliest age incidence?*

PROFESSOR LORIMER DODS said that ten or perhaps twenty years earlier some of them had been in the habit of telling medical students that acute rheumatism was rare in patients under five years of age and extremely rare in those under four; but it was known since that nearly 20% of initial attacks occurred before the age of five years and that the disease appeared occasionally during the second year of life or even earlier; in his experience the onset before three years of age was usually associated with a strong family history of the disease and carried a worrying prognosis. At a rough guess, he thought that the usual age of acute rheumatism lay somewhere between four and thirty years of age; although he understood that cases had occurred in the sixty to eighty years age group. He was not sure about the upper limit of the age spectrum and hoped that a colleague on the panel would help him.

DR. R. F. A. STRANG said that, in a paper published some years earlier, it was revealed that in patients of fifty years of age or more who were suffering from rheumatic heart disease, the cause of death was a recrudescence of the disease.

QUESTION 5.—*Do salicylates act merely as antipyretics and analgesics or do they have some particular effect on the early pathological changes of the disease?*

DR. J. H. YOUNG said that it was possible that salicylates had two specific effects on the pathological changes in rheumatic fever. In the first place, salicylates reduced the sedimentation rate. Homburger had added fresh red blood cells to plasma and to plasma containing salicylates and had found that the presence of salicylate reduced the sedimentation rate. Watkinson had studied the effect of salicylates in three groups of patients suffering from rheumatic fever. The first group received little or no salicylate therapy and the sedimentation rate took up to twenty weeks to return to normal. The second group had received 200 grains of salicylate a day and the sedimentation rate had taken up to twelve weeks to return to normal. The third group had received massive salicylate therapy, up to 600 grains a day, and the sedimentation rate had returned to normal in five weeks or less. Thus, the time which the sedimentation rate took to return to normal had depended upon the amount of salicylate administered. The second specific effect discussed by Dr. Young was the inhibition of hyaluronidase. He stated that some workers thought that the fundamental lesion in rheumatic fever was a degeneration of collagen brought about by the action of the enzyme named hyaluronidase; salicylates were known to inhibit the action of that enzyme and might therefore prevent the development of further pathological lesions by preventing further degeneration of the collagen. Dr. Strang said that Watkinson had stressed the point that the salicylate mixture must be freshly prepared as it seemed to lose its "kick" with age.

QUESTION 6.—*What dosage of salicylates is advised and how should they be prescribed?*

PROFESSOR LORIMER DODS said that, before discussing the dosage of the salicylates, he wished to point out that he, too, believed that the drugs had a specific effect on the disease and that adequate plasma salicylate levels should be maintained throughout the active stages of the disease if full therapeutic effects were to be achieved. He realized that it was foolish to mathematize about an ideal plasma salicylate level or about the exact dosage of salicylate which would be needed to achieve and maintain that hypothetical level; but he considered that it was reasonable to attempt to maintain the level in the blood at something in the neighbourhood of 30 milligrammes per 100 cubic centimetres of blood. He then said that he had found in the wards that approximately 1·5 grains of sodium salicylate per pound of body-weight per day, given with equal amounts of sodium bicarbonate, were sufficient to maintain the plasma salicylate at about that level in most instances, with variations down to 10 milligrammes and up to 50 milligrammes per 100 cubic centimetres. He added that without the sodium bicarbonate the plasma salicylate concentration was higher; with dosage based on 0·5 to 0·75 of a grain per pound per day, the adequate blood level was attained and could be maintained. The method of calculating the required dosage was probably applicable till the body weight reached approximately 80 pounds; for heavier children they had to make another guess. No doubt many knew that the rate of excretion bore a direct relationship to the amount of fixed base available for excretion, or, expressed loosely, increased alkalinity of the urine meant increased excretion of salicylates. The traditional ritual of adding alkali to the salicylate mixture represented a rather Irish mechanism as it merely kept the plasma salicylate level down by increasing the rate of excretion, thus minimizing the risk of salicylism. Professor Dods said that he considered that a child should receive the full dosage of salicylates throughout the active stages of the disease, and that that policy should be continued for a few days after the apparent establishment of quiescence. In their experience, the earliest signs of salicylism were loss of appetite, slowing and deepening of respiration, at times quickly followed by nausea, vomiting and some degree of drowsiness.

QUESTION 7.—*Are other salicylate preparations preferable to the old and tried sodium salicylate?*

DR. S. G. NELSON said that sodium salicylate in adequate dosage was in general the drug of choice. Aspirin acted mainly by virtue of its salicylate component; with older subjects, in whom the arthritic element might be more definite, the greater analgesic effect of aspirin was an advantage; at all events, prolonged administration was essential. He went on to say that succinate salicylate therapy rested on a poor experimental basis; it was not advocated as a replacement of the older preparations.

DR. R. F. A. STRANG said that the succinates had been tried in rheumatic fever, but, from a report in *The New England Journal of Medicine*, it appeared that they were without effect in the treatment of patients who had later responded to salicylates in the predicted manner.

DR. S. A. SMITH remarked that even those who had persevered had been extremely disappointed with the succinates.

QUESTION 8.—*Have the antibiotics any use or danger in the treatment of acute rheumatism?*

DR. S. A. SMITH said about penicillin that it was of no value, but did no harm and of the sulphonamides that they were of no value but might do harm.

DR. R. F. A. STRANG added that penicillin could cause a flare-up of various forms of the disease and should be used with caution.

QUESTION 9.—*On what evidence is carditis diagnosed in rheumatic fever?*

DR. S. A. SMITH said that certain of the patients with carditis presented definite signs. In the first place, the heart increased rapidly in size, the size was determined by percussion and confirmed by radiography. A pericardial rub could be picked up but was frequently missed. The electrocardiographic changes were not limited to the prolongation of the *P–R* interval; the whole systolic range from *P* to *T* was prolonged. Additional features indicative of the occurrence of carditis included persistence of fever, despite adequate salicylate therapy, and the occurrence of tachycardia affecting even the sleeping pulse rate. The presence of a murmur when it appeared as a new phenomenon at the apex and persisted and changed, or in the aortic area and persisted, provided clear evidence of carditis. Estimations of the blood sedimentation rate were no more than helpful.

Dr. Smith went on to say that between 50% and 60% of patients with rheumatic fever presented signs such as he had described; their absence, however, did not exclude carditis and there was probably some degree of carditis in almost all cases. It was a disconcerting fact that a substantial number of patients, in whom the signs of carditis were not present in a first or even in a subsequent attack, turned up in later years with definite mitral stenosis; and further, one-half of the young adult patients with mitral stenosis did not give a clear history of rheumatic affection or chorea, even when closely questioned.

QUESTION 10.—*What are the criteria of quiescence and how long should a patient suffering from acute rheumatism remain in bed?*

PROFESSOR LORIMER DODS said that he hoped they had all enjoyed Dr. Smith's answer to the previous question as much as he had; he thought that the clear, logical definition of the problem would excuse him from distinguishing between the child with obvious carditis and the child who might or might not be suffering from such lesions. How were they to decide that a child had reached the quiescent stage and might begin the getting-up process? Most text-books would contain information on the subject emphasizing absence of fever, a pulse rate within the normal limits, particularly when the patient was asleep, the absence of significant alterations in the cardiac signs, the absence of limb or joint pains and of nodules, and a normal blood sedimentation rate. Dr. Young had just pointed out that salicylates *per se* might be responsible for the normalcy of the sedimentation rate; for that reason it was at times advisable to repeat the estimation after a few days had passed without the child's receiving any salicylate. Professor Dods went on to say that it would be found in most text-books that emphasis was laid on the relatively normal state of the hæmoglobin values, the white cell counts and the electrocardiograms as signs of quiescence. With reference to the electrocardiographic criteria, Professor Dods commented that he did not think it was justifiable to keep a child who was apparently well at rest in bed because of the demonstration of prolongation of the *P–R* interval or of the total electrical systole; he was not sure what the prolonged interval meant, if the child appeared to be normal by all other standards, but he was certain that children were being kept at rest unnecessarily for many weeks on that account alone. He added that there were other extremely important signs of quiescence which would not be found by shuffling the papers at the end of the bed; he referred to the value of the evidence obtainable from the mother or the nurse. In that way they could find out that the child was eating and sleeping much better; that he was not unduly pale or tired at the end of the day; and that he was looking better and gaining weight.

Professor Dods went on to say that the usual procedure adopted in his wards was to suspend the salicylate therapy for a few days when they thought the disease was quiescent, and, in order to make sure that the disease remained quiescent without the assistance derived from the salicylates, to keep the child under observation for a few days before initiating the process of getting up. He concluded with the remark that after such a breathless recitation of the signs of quiescence as he had given he would be foremost in admitting that the problem was not one of simple arithmetic, but that clinical sense—which was perhaps just common sense—had to be included in the equation.

DR. S. A. SMITH deprecated over-long restriction of physical activities, saying that there had been too many cripples created who did not limp; children were franker than adults and did not naturally enjoy rest in bed, and, besides, they were ready to give in before they damaged themselves by physical exertion.

QUESTION 11.—*What is the outlook for a child who has just suffered his first attack of rheumatism?*

PROFESSOR LORIMER DODS said that he thought that they might begin with the assumption that juvenile rheumatism usually occupied one of the first three places among the fatal diseases of childhood in Australia and that it had been assessed, in America, as first of the fatal diseases of the later portion of childhood between the ages of ten and fourteen years. Several thousands of cases had been reviewed in the United States approximately ten years after what was assumed to have been the first attack; from the data obtained it appeared that a little more than 25% of the subjects had died and that approximately 40% were suffering from significant carditis. It would seem then that juvenile rheumatism was responsible for aproximately 80% of the heart defects of childhood and for about 33% of heart disease met with in adult life. Whatever figures were selected for quotation, they could safely reach the conclusion that juvenile rheumatism was one of the most important killing diseases and was certainly the greatest crippling disease of the later half of childhood.

DR. S. A. SMITH agreed that one-third of all deaths from heart disease arose from rheumatic carditis, but thought that the dangers and the gloomy outlook had probably been underlined too heavily; it might be assumed that those who were affected relatively mildly would make a good recovery. The reports of assurance companies in the United States of America supplied evidence that the outlook was good for children who had had a single attack without relapse; among young adults with a history of a single attack and no evidence of heart disease at the time of examination, the mortality was very little above normal and, even with multiple attacks but without great cardiac involvement, the mortality, though greater, did not prohibit assurance; the increase in rate was no higher than that associated with certain common occupations. In general, he felt that the serious side had been overemphasized; in the discussion of the diagnosis it had been pointed out that few, if any, escaped carditis, but that a very significant proportion of rheumatic fever patients escaped serious heart damage and that the outlook for them was excellent.

QUESTION 12.—*Are there any measures of practical value which will diminish the risk of recurrences?*

DR. S. A. SMITH said that the prophylactic aspect of the subject under discussion was of great importance because of the direct relationship between the degree of cardiac damage and the number of recurrences. The great majority of recurrences happened between the ages of four and thirteen years; there was a great falling-off in recurrences from fourteen to sixteen years and they were rare between seventeen and twenty-five years of age. Type A hæmolytic streptococcal sore throats were the most frequent cause of precipitation of rheumatic activity, but other illnesses, fatigue and exposure and other factors could be involved.

Dr. Smith said that some people thought that it was sufficient to attend to nutrition, hygiene and socio-economic factors with a good after-care service; in the London County Council Scheme there was integration of the services of the family physician, clinic, hospital, convalescent home and school, and supervision of the family environment; that service had been very effective. Prophylactic use of the sulphonamides or of penicillin given orally had supporters. Dr. Smith said that sulphadiazine, 0·5 gramme, given twice a day, had been on trial for many years and the objections to it were that it was not universally effective, it might be toxic, and encouragement was given to the production and dissemination of resistant strains of organisms. He did not consider that the oral use of penicillin, for the purpose under discussion, could yet be recommended to the profession; although there were no toxic effects and it was very effective against the dangerous hæmolytic streptococci, it too might encourage resistance; it was also costly when used twice a day for long periods of time.

Dr. Smith called upon Professor Dods to make a statement about the removal of tonsils as a prophylactic measure against rheumatic affections.

PROFESSOR LORIMER DODS said that any decision about tonsillectomy should be based on a careful review of the child's history and thorough repeated examinations of the upper respiratory tract. The tonsils should not be removed just because the child had suffered from an attack of acute rheumatism or because some doctor had told the family that every child who had had acute rheumatism should have the tonsils removed. The operation should be designed to minimize the frequency of upper respiratory tract infections.

QUESTION 13.—*Is rheumatoid arthritis essentially a disease of young women? And how is the diagnosis made?*

DR. R. F. A. STRANG said that a recent survey by the Empire Rheumatism Council had shown that there was no particular age group in which the incidence of rheumatoid arthritis was notably heavier than in any other and that the average age was between forty-one and forty-two years. A graph had been prepared in Denmark, however, where rheumatoid arthritis was a notifiable disease; for females there were three peaks, the earliest between twenty and thirty years of age, one at the menopausal period and one at sixty years. Dr. Strang had the impression that the disease was more florid in the female such as the harried housewife who had to wring clothes and that that trend would become more definite as the forty-hour week shifted the burden from man to woman. It was certainly true that the young housewife needed more help and she deserved any of the few beds they could bludgeon out of the hospital authorities for the treatment of the disease.

DR. J. H. YOUNG said that rheumatoid arthritis usually started with swellings of the proximal interphalangeal or metacarpo-phalangeal joints. In the early stages the typical swelling was symmetrical and affected the soft tissues around the joint; decalcification could be demonstrated from skiagrams; the sedimentation rate was almost always increased; and the patient was often ill or anæmic. When osteoarthritis affected the hands, it seldom did so before the age of forty years; the condition started in the terminal interphalangeal joints and might spread to the proximal interphalangeal joints and to the carpo-metacarpal joints of the thumb. At an early stage, the swelling was bony and asymmetrical and could be demonstrated radiographically as a narrowing of the joint space, often with lipping. Both in rheumatoid arthritis and in osteoarthritis, however, the distribution of the joint lesions might be symmetrical or asymmetrical; it was each individual swelling rather than the distribution of the swellings that was symmetrical in the early stages of rheumatoid arthritis and asymmetrical in osteoarthritis. Dr. Young added that in the minority of cases rheumatoid arthritis started elsewhere than in the hands and might start in the knees or feet; diagnosis then depended upon persistence of the periarticular swelling and on the increase in the sedimentation rate.

Dr. Young also referred to the place in the differential diagnosis of two rarer conditions—reflex dysarthrosis of one or both hands and sclerodactyly or scleroderma; in the former condition the swelling was uniform and associated with pain and stiffness, and in sclerodactyly the skin was stretched tightly without definite swelling.

QUESTION 14.—*What light has the recent work on the adrenal steroids thrown on the nature of rheumatoid arthritis? In view of this work is it not proper to condemn that form of assault called "removal of septic foci" in this disease?*

DR. S. G. NELSON said that Philip Hench from the Mayo Clinic, in the Heberden Oration in 1948, had drawn attention to what he called the potential reversibility of rheumatoid arthritis. He had pointed out that it had long been a clinical observation that patients with the disease manifested remissions when jaundiced or during pregnancy. The artificial induction of jaundice was commonly followed by improvement which usually regressed when the jaundice cleared. The lesions of rheumatoid arthritis were not confined to the joints; indeed, there were widespread systemic and focal lesions. The basic focal lesion was a change in the supporting tissue or collagen. By random biopsy of muscles in affected persons, it had been shown that foci of lymphatic infiltration were present along with degenerated fibrillary material; the nerves might suffer similar lesions and lesions could be demonstrated in the various cardiac tissues in 60% of cases. The main joint changes were initially periarticular and joint involvement was secondary to encroachment by soft tissue. Dr. Nelson added that the systemic manifestations of the disease included pyrexia, anæmia, pain, stiffness and malaise. He explained that the concept of rheumatoid arthritis as one of the group of collagen diseases had been strengthened by the recent work with adrenal cortical steroids; the other collagen diseases were acute disseminated *lupus erythematosus*, dermatomyositis, scleroderma and *polyarteritis nodosa*. No causative factor was yet known, but the disturbance of the collagen elements was common to the group; the affected collagen tissue was in the skin, muscle, endocardium and blood vessels.

Dr. Nelson then said that the maintenance of persistently high levels of Kendall's compound E (17-hydroxy 11-dehydrocorticosterone with O-atom in 11 position) had been shown on repeated trials to produce reversal of the soft tissue changes in rheumatoid arthritis and rapid relief of the clinical manifestations; patients previously bedridden became ambulatory and even active again. Concurrently with the clinical improvement, the blood sedimentation rate dropped to normal and the periarticular swelling was reduced. The withdrawal of the daily dose of the steroid was followed by relapse, and sometimes rapidly; persistence with it had usually produced acne, hirsuties and "moon-face". Dr. Nelson stated that equally dramatic effects had followed the administration of "ACTH"; where it had been possible to check the effects of "ACTH" on the adrenal glands, adrenal cortical hyperplasia was found. In each case it was necessary, in order to bring about the reversal of the clinical signs, to maintain levels of adrenal steroid vastly in excess of the normal daily requirement; in the case of compound E, the excess was a five-fold one. Similar reversal of the clinical course of the other collagen diseases, including acute rheumatism, had been produced. Marriatt, of Edinburgh, had demonstrated that there was a significant difference in the ability of sufferers from rheumatoid arthritis to deal with a different steroid—progesterone. In reviewing the observations leading up to the cortisone trials, Dr. Nelson mentioned how Selye had described the adaptation syndrome after work done on the effects of shock and other harmful stresses which tended to exhaust the adrenal cortex; and he referred to the production of arthritis by over-dosage of "DOCA" and salt, and to Hensch's postulate in 1948 that the presence of an adrenal factor accounted for the remissions in rheumatoid arthritis.

Dr. Nelson stated that the conclusions drawn from the recent work might with advantage be summarized. Pro-

longed over-dosage with artificial or with natural adrenal steroids of certain types would produce a reversal of the course of the disease. The reversal persisted for the duration of the therapy and ceased when it was discontinued. There was some evidence that patients suffering from rheumatoid arthritis had a disorder of steroid metabolism. There was no difference between the response to artificial substitution therapy and the stimulation of the adrenal cortex by corticotrophic substances; the cortex was responsive to stimulation. The similarity between the types of response to that form of therapy in all so-called collagen diseases gave support to the earlier ideas about their essential similarity. The magnitude of the dose required to produce the clinical response supported the concept that there was a chemical effect on collagen chemistry rather than the idea that rheumatoid arthritis was a deficiency disease involving the adrenal cortex analogous to diabetes and the islet tissue of the pancreas. And finally, adrenal cortical therapy in its various forms had, at the present stage of knowledge, to be regarded as experimental; a tool for clinical research rather than a solution of the therapeutic problem.

DR. J. H. YOUNG remarked that as the adrenal gland was normal, some pituitary deficiency might be linked up with it through the diencephalon.

DR. R. F. A. STRANG, in answering the second part of the question, referred again to the report of the Empire Rheumatism Council and to another survey made in Edinburgh; both sources, he said, contained facts showing that there was no significant difference in the incidence of septic foci in a controlled series of rheumatoid arthritic cases. Consultants called had a tendency to feel obliged to advise active treatment and septic foci continued to be removed; perhaps it was thought that a little mutilation was good for the psyche. However, there was, he added, a type of polyarthritis that followed sharply on an acute infection of the upper respiratory tract which would settle down or disappear to recur after another similar infection; it was possible also that adult patients with rheumatic fever were benefited by removal of a focus that might be the seat of infection. In established rheumatoid arthritis he had not seen any benefit from that kind of surgery. Speaking of bronchiectasis accompanying rheumatoid arthritis, Dr. Strang said that they knew that the lung condition could not be regarded as a septic focus for the arthritis, but that the degeneration was part of the disease; he preferred to think of rheumatoid disease rather than of rheumatoid arthritis.

DR. J. H. YOUNG said that it was improper to condemn the removal of septic foci if they really were septic; one of the principal methods of treatment was to improve the general health by every means at their disposal, and that included the removal of septic foci. He condemned the indiscriminate removal of teeth, tonsils and other organs which were doubtfully septic, though, of course, they had all seen the occasional dramatic remission initiated by the removal of a "focus". It was his custom to deal with foci regarded to be septic on the basis of history and examination, but he did not submit the patients to expensive and futile radiological and pathological searches for a hypothetical focus.

DR. S. A. SMITH remarked that, in his opinion, Dr. Strang had weakened at the end.

QUESTION 15.—*The panel has been asked to express its views on the therapeutic value in rheumatoid arthritis of several forms of therapy currently practised, including rest, climate, gold, aspirin, succinate salicylate, "Percorten", transfusion of blood, the antibiotics, vaccines, bismuth.*

DR. J. H. YOUNG spoke on rest, climate and gold. He described rest as a therapeutic measure of value in certain circumstances. Bed rest was necessary for patients with acute arthritis or when the condition was rapidly progressing, for patients with definite constitutional disturbance or with flexion contractures at the knee joints. But the patient must not be allowed to lie like a lump of putty; muscle exercises and joint movements should be combined with general rest. Swollen, painful joints should be rested and supported in plaster. A small percentage of patients obtained relief in a warm climate, but for the majority no dramatic effect could be expected from climatic conditions.

Speaking of gold therapy, Dr. Young used an authoritative reference rather than a personal assessment. It had appeared in the last "Rheumatism Review" which was published before the public announcements about cortisone. The extract was: "Rheumatologists of experience, with few exceptions, reported results from gold better than those obtained with any other single remedy." That also expressed Dr. Young's opinion; gold should, however, be used with discretion; it would help only to arrest the activity of the disease; it would not repair damaged cartilage or restore deformities. The treatment had been in use for twenty years and, if anything, was gaining ground. Gold isotopes lodged not only in the joint capsules but in the kidney, liver, skin, and other places.

DR. R. F. A. STRANG spoke on rest, aspirin, the succinate salicylates, and hormone therapy. He said that he had seen rest used best at Duthie's clinic at Edinburgh; the régime was a sanatorium one of effort graduated from complete and absolute rest in bed to the climbing of stairs. Aspirin was good for the relief of the pain and especially the stiffness of rheumatoid arthritis; the patients could get up more speedily after taking aspirin; calcium aspirin could be used if the stomach was irritated and seemed to be equally beneficial. Dr. Strang said that the original paper introducing succinate salicylate therapy was not lucid; the tablets contained aspirin and the patients were having gold therapy and any benefit might reasonably be ascribed to the aspirin, but, at all events, he was unconvinced by the conclusions drawn.

On the big subject of hormonal therapy, Dr. Strang commenced by saying that the wide publicity given nowadays to desoxycortone acetate ("DOCA") warranted a discussion. Five milligrammes of "DOCA" were usually given intramuscularly, followed immediately by the intravenous injection of 1·0 gramme of ascorbic acid. Conflicting reports had come from abroad; most of the members of the Advisory Committee of the Empire Rheumatism Council had conjointly said that it had not improved the condition of the patients. In Dr. Strang's experience the results had varied considerably; some patients had shown temporary improvement, but many had not. When there was present in the illness an appreciable psychological element, as was often the case with women, it had helped most. He had formed the impression that the injection of ascorbic acid would often account for the apparent or real improvement; it should be remembered that the ascorbic acid level in the blood was usually low in rheumatoid arthritis. He went on to say that he had had experience of the use of ascorbic acid in combination with several other hormonal preparations, including progesterone and testosterone, with similar results; anything which made those patients say that they felt better was of value. Dramatic results could be obtained by injecting adrenaline-in-oil with diminution of pain, increased strength and a definite mental uplift; it might not have to be repeated; but the danger of coronary insufficiency should be noted. Dr. Strang mentioned a number of other systems of treatment he had adopted, such as testosterone implantation in men over forty years of age with changes suggesting the onset of acromegaly, which were effective for almost six months, the administration of progesterone and its isomer pregninolone to women, which relieved pain and diminished toxicity, but was complicated sometimes by vaginal bleeding. Noting remission for two days after a dental extraction under procaine anæsthesia, Dr. Strang had satisfied himself that, in that case, the remission could be repeated by the intramuscular injection of procaine for months afterwards. He summarized his opinion by saying that the steroids often made the patients feel better, but, with the possible exception of testosterone propionate, there was no greater improvement in the disease of the joints than could be obtained with proper rest and splinting; there was some sedative effect; the patients said that they slept better.

DR. S. G. NELSON commented on gold therapy after Dr. Young had spoken, by saying that when the treatment was pushed to the toxicity limit the arthritis relapsed; if "BAL" was used, the disease usually recurred.

DR. S. A. SMITH added that if a form of therapy had a specific effect it stuck out like a gum-boil; the effect of antimalarial and antibiotic forms illustrated what he meant. As they had been fiddling around with gold, which was a toxic substance, for twenty years and were not yet clear about its specificity, he thought its administration should be dropped.

Dr. Nelson then discussed blood transfusion, antibiotics and vaccines, relegating substances like bismuth and gold to the category of remedies of doubtful value. He mentioned in some detail a carefully controlled experiment conducted at the Royal National Hospital for Rheumatic Diseases at Bath and reported by Simpson *et alii* in *Annals of the Rheumatic Diseases*, Volume VIII, 1949, page 277. The value of blood transfusion in rheumatoid arthritis was not considered to be more than adjuvant. The conclusion reached was that it was a useful supporting measure meriting much wider use, as it made it possible for the patients to persist with and derive benefit from other treatment.

Dr. Smith interjected that the good effects were much greater than the improvement in the blood cell counts.

Dr. Nelson then turned his attention to a review of the position of some of the antibiotic remedies; they were of no value unless aimed at the eradication of a known infective agent such as the gonococcus or streptococcus. He concluded by saying that there were some clinicians who clung tenaciously to the concept and practice of vaccine therapy, but he did not belong to that group.

QUESTION 16.—*What is the nature of osteoarthritis? What hastens its occurrence in some individuals?*

DR. S. G. NELSON said that osteoarthritis was essentially a degenerative change affecting cartilage in joints and ears. Bennett had supplied histological proof of early changes in articular cartilage antecedent considerably to the clinical manifestation of signs and symptoms. Some had an hereditary predisposition to suffer earlier than most. Age, obesity, hypertension and certain endocrinal deficiency states were named as factors that hastened the generalized degenerative changes; postural strain, physical traumata, chemical traumata and disk lesions were associated with localized lesions.

DR. J. H. YOUNG agreed with what Dr. Nelson had just said and referred to the mice experiments of Martin and Ruth Silberberg of Saint Louis, who had confirmed the early appearance of degenerative changes and control with thyreoid, sex hormones and diet. He spoke of the aggravating effects of obesity and acromegaly and of the postural changes underlying *spondylitis deformans* which Swaim, of Boston, had been watching closely for years. The weight was transmitted through the thin posterior part of the acetabulum when obesity led to lumbar lordosis and when the spine was flexed forward. After years of observation, Swaim had stated that if the normal posture could be preserved those people would not get arthritis of the hips.

QUESTION 17.—*Is there any specific treatment for osteoarthritis?*

DR. S. G. NELSON said that there was nothing to reverse the changes which were already there. Metabolic factors might be amenable to correction in some cases. Pain should be relieved if possible as pain set up muscle spasm which hurt and a vicious circle developed. Postural strain should be corrected when feasible. Physiotherapy and orthopædic treatment had their opportunities. But there was no specific therapy for osteoarthritis. With that view Dr. Strang concurred.

QUESTION 18.—*What treatments have been found most useful in chronic osteoarthritis of the hip joint?*

DR. R. F. A. STRANG mentioned lactic acid therapy, reduction of trauma, physiotherapy and non-weight-bearing exercises, reduction of obesity, correction of faulty posture, injection of procaine into the periarticular tissues (Kellgren), obturator nerve injection and surgical measures designed to correct adduction deformity, "Vitallium" caps and orthopædic devices for the arrest of scoliosis. He said that the measures adopted would consist of a mixture of those mentioned and of others which he might have mentioned; he understood that others would supplement his reply.

DR. J. H. YOUNG added the opinion that ease and relief could be obtained by supplying the patient with a restraining weight and pulley attached to the ankle when the patient was in bed.

DR. S. A. SMITH said that osteophytes appeared and the joint space was reduced until the patient could no longer walk and was constantly in pain. Obturator nerve section helped at times. Rebuilding of the joint had to be attempted ultimately; cupped arthroplasty, the Smith-Petersen operation, brought about the disappearance of the intolerable and constant pain.

QUESTION 19.—*What is the treatment of early ankylosing spondylitis?*

DR. R. F. A. STRANG said that radiotherapy to the spine had altered the outlook and they no longer had need to meet the deformity; improvement was general and pain was relieved. Repetition of the treatment might be required periodically. Orthopædic correction of the kyphosis, breathing and postural exercises and prevention of deformity had to be planned for each case on its merits.

QUESTION 20.—*How is the diagnosis of acute gout made?*

DR. S. G. NELSON said that a prerequisite to the diagnosis was that the possibility should be borne in mind; gout occurred occasionally and used to be less rare. The onset was typically sudden, death occurring with severe pain and usually great irritability and anxiety lest the affected part might be touched. A professor of anatomy who had suffered from it said that the pain could be depicted as that resulting from placing the part in a vice, screwing it tightly till the pain was intolerable and then giving it a few more turns. The region affected became red, shiny and tender. There was a rapid response to colchicum therapy. Neither the biochemist nor the radiologist could help to establish the diagnosis, but elimination of other possibilities was sometimes advisable.

QUESTION 21.—*What is the best method of management of chronic gout?*

DR. J. H. YOUNG said that in the management of chronic gout the patient should be advised to eat simple food and neither eat nor drink to excess. Foods containing large amounts of purine should be avoided; they included liver, kidney, sweetbread, brains, meat extracts and gravies. Foods containing moderate quantities of purine should be reduced in amount; they were items such as meat, eggs, peas, beans and spinach. An excess of fat would precipitate an acute attack of gout, so the fat content of the dietary had to be reduced. Vitamin B_1 and iron had to be added to make good the deficiencies. Over-work, worry and chilling were to be avoided. Aspirin aided the elimination of uric acid; 30 to 60 grains should be taken for three consecutive days each week. Colchicine helped to reduce the number of attacks and one one-hundredth of a grain should be given once or twice a day. Only when that régime failed was "Atophan" used, 0·5 gramme being given three times a day for three days each week. The aspirin and "Atophan" should not be given on the same day.

DR. S. A. SMITH said that he had not seen a patient with gout for many years. Nothing prevented acute exacerbations. He was not satisfied with colchicine and was very afraid of "Atophan". They did not seem to know much more about gout than was known in the middle of last century. In conclusion, he stated that the panel discussion had demonstrated that there was still a great

deal to learn about the rheumatic disorders, but the members of the large audience had heard the opinions of some of those who had given the matter a considerable amount of thought.

The Stawell Prize, 1949.

At the conclusion of the panel discussion, Dr. Alex. Murphy, President of Congress, presented the Stawell Prize, 1949, on behalf of the trustees to Dr. T. E. Lowe as representative of the joint winners, Dr. T. E. Lowe, Dr. H. B. Kay and Dr. H. A. Luke. The subject was "The Practical Significance of Modern Cardiological Investigations", and it was determined by the appointed trustees. Dr. Lowe is Director of the Clinical Research Unit at the Alfred Hospital and Dr. Kay and Dr. Luke are fellow-members of the unit.

Combined Meetings of Sections.

SECTION OF MEDICINE AND SECTION OF SURGERY.

A COMBINED MEETING of the Section of Medicine and the Section of Surgery was held to discuss: (*a*) Peripheral vascular disease; (*b*) peptic ulcer.

Peripheral Vascular Disease.

DR. J. KEMPSON MADDOX (Sydney), discussing medical aspects of peripheral vascular disease, said that in his paper he proposed to restrict the term to a consideration of senile *arteriosclerosis obliterans*. He described the place of that disease in Boyd's arteriographic classification, together with his view of the close relationship between it and *thrombo-angiitis obliterans*. Intermittent claudication meant block to a major arterial channel and was an important specific symptom. The factors which accelerated arteriosclerosis were better understood than those which initiated it. The assessment of peripheral arterial insufficiency comprised the determination of past damage and present maximal function. The unaided senses could give almost as much information as complex laboratory equipment. Methods of encouragement of collateral supply, and prophylaxis against gangrene, were elemental in the education of the patient with ischæmic limbs. Progress was difficult and depended upon the patient's age, the ætiology of the condition, and the patient's ability to adhere to a restricted régime. Dr. Maddox said that vasodilator drugs and physical therapy had been disappointing in his hands. Even the newer sympathotropic drugs could not be expected to produce more than transitory results. Dr. Maddox emphasized the value of rest and of sympathectomy in selected cases. He said that the antibiotics and anticoagulants permitted a more conservative attitude than hitherto. Refrigeration anæsthesia was still *sub judice*. Myoneurectomy and tenotomy were helpful for the advanced cripple. It was essential to adapt therapy to each individual patient.

DR. S. F. REID (Melbourne) read a paper on the surgical aspects of peripheral vascular disease. He dealt with arterial diseases only. He outlined the principles of treatment and then applied them to the management of some common diseases. The principles were as follows: (i) The restoration of normal circulation—for example, embolectomy, restorative aneurysmorrhaphy and vascular suture or graft. (ii) The prevention of progress of occlusion. The use of anticoagulants in acute thrombosis, the prevention of stasis by encouraging collateral circulation and the prohibition of smoking in Buerger's disease were examples. (iii) The care of ischæmic tissues. In acute ischæmia the metabolism of the limb should be minimized by immobilization and cooling. Chronically ischæmic limbs needed care to prevent trauma and infection. They should be protected from heat and cold. (iv) The establishment of collateral circulation. The methods of inducing vasodilatation were many. Dr. Reid set out the use of drugs, reflex vasodilatation and various forms of paralysis of the vaso-constrictor nerves. (v) The symptomatic treatment of pain. For the pain of acute ischæmia the intravenous injection of procaine was useful. In ischæmia of muscles claudication might be abolished by division of the motor nerves to muscles. Tenotomy of the *tendo Achillis* was considered. Cutaneous nerve section might be indicated by intractable skin pain. (vi) Amputation for non-viable tissues. Dr. Reid discussed the site and indications.

Dr. Reid divided the obliterative diseases into those which affected the proximal vessels and those which resulted in peripheral occlusion. The proximal group usually presented with claudication. Although sympathectomy usually did not help that condition, it was commonly performed before muscle denervation. The peripheral group presented with skin ischæmia, but response to sympathectomy was only moderately good.

Dr. Reid discussed the place of cutaneous nerve division. He also said that the control of hyperglycæmia in the degenerative group often gave relief from both skin and muscle pain. Modern longevity meant more degenerative arterial disease. Control of pain and establishment of collateral circulation might minimize the degree of ablation of dead tissue.

DR. E. DOWNIE (Melbourne), in opening the discussion, said that the subject under consideration must surely be one of the most important and at the same time one of the most unsatisfactory problems of modern medicine. It was indeed remarkable that they had been quite satisfied for many decades to accept the views of the continental schools of pathology that such changes as they were considering were due to "degenerative" processes in the vascular system. A remarkably small amount of investigation on the subject had been undertaken during the present half-century and most of that had consisted in experimental work on animals from which illogical analogies had been made to the questions of the ætiology of human vascular disease. Many of the histological changes which were observed in the vessel walls if seen in other tissues would be regarded without hesitation as inflammatory in character. Such changes, it was believed, resulted from the effects of certain stimuli which fundamentally exerted their effect because of some physical or chemical property. Further, such changes as did occur bore a relationship to the vascularity of the tissue concerned. Dr. Downie thought, however, that it was fair to say that there were few structures in the body in which the vascular supply was so poorly understood as the tissues of the vascular system itself. In the late 1930's Winternitz and his associates had provided some stimulating work upon the subject which had not so far received the attention it deserved. Dr. Downie suggested that while they remained in ignorance of the changes which occurred as an apparently normal process of vascular reaction in the closure of the *ductus arteriosus*, all their speculation and theorizing on the causation of one or another apparently demonstrable type of vascular disease must rest on a very insecure foundation. Surely the time had come to cease the unhappy habit of segregation and classification and to return to more fundamental considerations of the nutrition of the vessel wall and its responses to noxious stimuli.

Dr. Downie went on to say that some years previously he had had the opportunity of examining a number of limbs which had been amputated because of gangrene affecting the extremity. He thought that one of the most striking features in many instances was the extreme degree of old and organized occlusion existing in the main vessels of the amputated limb; so marked were the changes that it seemed astonishing that anything approaching an adequate circulation could be maintained by such patent vessels as were found. That had led him to the conclusion that the results of any surgical interference with the nervous control of the circulation or of the use of any

vaso-dilator substance must be determined by the condition present in each particular limb, and that no doubt helped to explain the exaggerated claims made from time to time on the efficacy of one or another procedure. It was easy to indulge in such happy generalizations that lumbar sympathectomy would relieve "rest" pain, but that the pain of exertion was likely to be unrelieved. The unfortunate thing was that in some instances the reverse occurred.

Dr. Downie said that Dr. Maddox had already stressed the importance of collateral circulation in maintaining the integrity of a limb subject to marked occlusive changes in the major vessels. It was an interesting speculation to wonder why, in the presence of advanced damage in the main vessels, those auxiliary channels seemed to escape the ravages of the change and, indeed, possessed the capacity of adapting themselves to the extra demands of carrying on the circulation of the limb. It was, however, a matter of general agreement, Dr. Downie felt, that such circulation as they could provide was merely a fraction of the normal. For that reason he would join issue with Dr. Maddox in his emphasis on the parenteral use of the antibiotics, even in large doses, in the control of infected diabetic gangrene. The concentration of such substances in the area where they were needed was surely better achieved by local application through Carrell tubes. Dr. Downie thought that it was for the same reason that he considered the effect of anticoagulants to be disappointing in the stemming of a gangrenous process. He failed to see how it was possible to obtain an adequate concentration in an extremity whose major vessels had been the subject of a previous and oftentimes unrecognized occlusion. Certainly in his experience the use of ethyl dicoumarol had seldom seemed to influence the course of spreading gangrene of a foot.

Dr. Downie said that many other aspects of Dr. Maddox's interesting and stimulating paper presented themselves for discussion, but time would not permit of further elaboration. In conclusion, however, he would like to affirm and to reemphasize Dr. Maddox's plea that each case should be considered as an individual problem and on its merits. Too frequently the patient who was the victim of occlusive vascular disease in middle or later life was regarded and treated as a young and healthy adult who was the victim of trauma. In youth the risk to life from limb was relatively slight, but in age the risk from limb to life could not be over-emphasized.

DR. A. E. COATES (Melbourne) said that Dr. Reid had given an excellent account of the present position of surgery in arterial disease of limbs. He agreed with Dr. Maddox that simple clinical methods were superior to instrumental aids in assessing the state of the peripheral arteries. He felt that a diet of low protein content was of importance in inducing the conditions under discussion, for he had had to perform 120 amputations on prisoners-of-war because of gangrene. He said that they should never forget the pioneer and fundamental work of Hunter and Royle in the surgery of the sympathetic system; even in America it was appreciated that the operation of lumbar sympathectomy had resulted from their researches. Arterial disease of limbs ran different courses; there was the acute catastrophe of popliteal embolus with acute spreading thrombosis and the chronic condition of Buerger's disease. For the relief of pain, he considered that injection was of no value and that it led to the danger of producing sloughs. The nerves must be cut cleanly. He felt that they should not be in a hurry to perform muscle denervation and that too-rapid improvement should not be expected after lumbar sympathectomy. In his attempts at embolectomy he had realized that spasm played a major part, and he considered arteriectomy the operation of choice. He had performed that operation in two upper and twelve lower limbs with the result that cold limbs gradually warmed and the paralysis and anæsthesia disappeared. Of twelve lower limbs operated upon, seven were saved; in three cases, sympathectomy also had been performed. In one case, arteriectomy and lumbar sympathectomy had been performed five days after the popliteal artery had become occluded and when the limb was cold and painful, resulting in the saving of the limb. That operation, however, was obviously not advisable for the slowly developing arteriosclerotic type of advancing years. Dr. Coates said that in his hands sympathectomy had a mortality rate of 3%. In the case of Raynaud's disease, sympathectomy was helpful but not curative. When amputation was necessary, it should be carried out below the knee with a "cuff" type of incision and with antero-posterior sutures, careful approximation being made without tension and yet not loosely. A good prosthesis could then be fitted. For the upper limb, he had performed a stellate ganglionectomy in most cases, as it was the only certain method of producing permanent sympathetic denervation of the upper limb. Much had been written about its disadvantages, but time had shown that it was superior to trunk section. He used the anterior approach. For lumbar sympathectomy he used an oblique incision and approached the second and third lumbar ganglia by the extraperitoneal route. Silver clips were used for bleeding points. He was against the use of anticoagulants following operation, and mentioned two cases of severe hæmorrhage attributable to their use. Regarding refrigeration, he had at first been enthusiastic, but later gave it up and regarded the method as dangerous.

Dr. Maddox, in reply, said that he had enjoyed Dr. Reid's advocacy of the preservation of as much tissue as possible, and he thought that all public hospitals should have a surgeon trained in vascular surgery to whom the physician might turn for assistance in treatment in early cases of the condition. Dr. Downie had said that he did not think antibiotics had a place in therapy, but Dr. Maddox had been impressed with the value of penicillin given by the intraarterial route. He agreed with Dr. Reid that anticoagulants had a place in acute thrombosis and embolism. Dr. Maddox considered four factors to be contraindications to sympathectomy: (*a*) An age of the patient over sixty years, (*b*) the presence of hypertension, (*c*) the presence of coronary artery disease, and (*d*) the presence of extensive gangrene. Calcification of some vessels was not a contraindication, but one must prove the presence of vasoconstriction which would be relieved by the operation.

Dr. Reid, in reply, said that there was little to add. Dr. Coates had raised the contentious subject of arteriectomy, but Dr. Reid denied that there was sufficient evidence to show that it had any real value. He considered it definitely contraindicated in cases of acute ischæmia, for operation, by lowering blood pressure, further reduced blood flow in the affected limb, and arteriectomy might lead to spreading thrombosis. He considered that amputation below the knee was to be preferred to operation above the knee joint, as a stable knee was essential to a satisfactory prosthesis.

Peptic Ulcer.

DR. IAN J. WOOD (Melbourne) read a paper on gastric and duodenal ulcer. He first discussed the ætiology of the condition, which he considered was composed of five damaging processes: (i) patchy gastritis or duodenitis; (ii) peptic digestion of any necrotic area caused by this gastritis or duodenitis; (iii) hunger, with its enhanced gastric secretion and gastric motility; (iv) malnutrition, causing lowered tissue resistance and poor tissue healing; (v) psychosomatic influences, especially in duodenal ulcer. Dr. Wood drew attention to the fact that pepsin and acid were secreted not only by day between meals, but during sleep; in duodenal ulcer the secretion was excessive. He also pointed out that little was known of the cause or distribution of patchy gastritis or duodenitis, which he suggested might be the precursor of ulcer. At the Clinical Research Unit of the Walter and Eliza Hall Institute investigations had been carried out into a number of cases of diffuse chronic gastritis. It was not yet known why the inflammatory condition in the stomach began and why it sometimes persisted; the answer to that question might be the key to the cause of peptic ulcer. Discussing treatment, Dr. Wood said that once the diagnosis of peptic ulcer was established, the physician's duty was to try to heal the ulcer rapidly, completely and permanently. If a patient reported with typical ulcer dyspepsia, and if the

past history was clear and the symptoms had been present for only a week or two, the institution of a régime with alkali, six meals a day, liberal milk drinks and increased rest was worth while. If relief of pain followed and the pain did not recur, all should be well. However, if the pain persisted for a further period, or if the attacks were often repeated, a comprehensive investigation should be undertaken. If the investigation disclosed an ulcer or highly suggestive symptoms, with a high or normal free acid secretion, then energetic measures should be taken to heal the ulcer rapidly and permanently. Dr. Wood outlined the régime to be adopted, with stress on psychological factors. Turning to the problem of the long-established chronic peptic ulcer with a long history of relapses or remissions, Dr. Wood mentioned the need to be on the alert for malignant disease, and described the findings which should arouse suspicion. He said that for the treatment of gastric and duodenal ulcer, a beginning should be made with six weeks of strict medical treatment, including bed rest, preferably in hospital, and then the patient should be allowed to return to work, even if the X-ray picture did not show complete healing. Minor relapses might be treated at home, severe relapses with the six weeks' course. A gastric ulcer which had failed to heal after six weeks should be suspected of malignant change. Operation should be decided upon in the presence of the following conditions: (i) if relapses were frequent or severe, with true pain rather than discomfort; (ii) if frequent and severe hæmorrhages occurred, especially when the patient was aged over fifty years; (iii) if pyloric obstruction was present, which was severe, or which did not respond to rest in bed, belladonna and sedatives; (iv) if symptoms and signs suggesting malignant disease were present. The operation of choice was subtotal gastrectomy, in gastric or duodenal ulcer. The only exception was the presence of pyloric obstruction in an elderly patient; gastro-enterostomy usually produced a satisfactory and permanent cure. Dr. Wood said that subtotal gastrectomy was an operation demanding great skill and judgement from the physician, the surgeon, the anæsthetist and the nursing staff, with adequate operating theatre and ward equipment and skilful administration of intravenous therapy. In unskilled hands the operation would cause high morbidity and mortality. He entreated those present to consider carefully the problem under discussion, and pointed out that it was tragic that the surgeon should ever be asked to remove most of the stomach in order to heal a tiny ulcer in the duodenum. Small erosions in the stomach and duodenum usually healed; but a time came when the conditions necessary for healing were not provided, and the ulcer became larger, wtih surrounding inflammation and fibrosis. Surely it was the physician's recognition of that early stage of established gastric or duodenal ulcer which was all-important. He must diagnose the ulcer and provide nothing less than the perfect conditions for healing.

DR. A. W. MORROW (Sydney), in opening the discussion, said that Dr. Wood had made a definite contribution to their ideas of treatment of peptic ulcer. He was pleased that Dr. Wood had drawn attention to the condition of chronic gastritis, the importance of which could be gauged from the fact that, in over 1000 cases of dyspepsia, the condition occurred as frequently as gastric and duodenal ulcer combined. Dr. Morrow and Dr. Goulston had formed the impression that carcinoma occurred more frequently in those cases, and they hoped to follow up that line of investigation. In chronic gastritis hæmorrhage was not infrequent and could occasionally be massive. Dr. Morrow was glad that Dr. Wood had stressed the fact that if the diagnosis was made early, peptic ulcer was by no means an incurable disease. Moreover, if they made an early diagnosis and treated the condition vigorously, relapses occurred far less frequently. Dr. Morrow thought that the real cause of peptic ulcer was above the tentorium rather than below the diaphragm. He said that Dr. Wood had wisely stressed the importance of pre-operative preparation and post-operative care, but he (Dr. Morrow) could not share Dr. Wood's enthusiasm for operation in duodenal ulcer. In his experience the "dumping" syndrome had occurred more frequently than Dr. Wood had suggested. Dr. Morrow was convinced that over-feeding after partial gastrectomy was liable to increase the incidence of that syndrome, which he was pleased to note Dr. Wood had differentiated clearly from the occasional case of hypoglycæmia occurring after gastrectomy.

DR. MAURICE JOSEPH (Sydney) asked Dr. Wood whether, in view of the importance of chronic gastritis, he would indicate the age distribution of the disease, and would state whether it was likely to be confused with functional dyspepsia in young people.

DR. G. L. HOWE (Sydney) said that he had added penicillin to the fluid used in the intragastric drip treatment of peptic ulcer, and would like to know whether Dr. Wood had had any experience with it.

DR. J. L. FREW (Melbourne) said that, in general, surgeons in Melbourne were opposed to vagotomy, but he had found in a limited experience that it yielded good results. He would therefore like to hear the opinion of surgeons of other States where that method was practised.

DR. B. T. EDYE (Sydney) said that he had been much impressed by Dr. Wood's paper, but the final word had not been said. He had used vagotomy only for patients who for some reason were unsuitable for partial gastrectomy, and he had been impressed by the relief of pain which that method had given. Vagotomy was still on trial, and its results could not yet be assessed. In dealing with gastric ulcer, the danger of carcinoma should never be forgotten. In early cases of gastric carcinoma symptomatic relief might be given by medical treatment, and that might be misleading. If a gastric ulcer did not respond satisfactorily in a reasonable time, the patient should be operated on.

Dr. Wood, in reply, said that 500 gastric biopsies had been performed in his clinic and their impression was that the changes in pernicious anæmia were different from those found in chronic gastritis. It would appear that the former predisposed to gastric carcinoma, but there was nothing to suggest yet that chronic gastritis was a precancerous condition. Regarding the "dumping" syndrome, Dr. Wood agreed with Dr. Morrow that large meals should be discouraged, but for psychological reasons he was averse to telling the patient that he had a small stomach. Regarding the age distribution of chronic gastritis, they had found the incidence to increase with advancing years, but the condition did occur in patients in their twenties and thirties. Test meal examinations carried out on 150 medical students had shown that only one had histamine-fast achlorhydria, and that subject had an atrophic gastric mucosa. Dr. Wood thought that the addition of penicillin to the intragastric drip fluid was worth considering; one of his colleagues had demonstrated that penicillin was absorbed from the gastric mucosa of patients who had undergone partial gastrectomy.

THE SECTION OF MEDICINE AND THE SECTION OF PUBLIC HEALTH, TUBERCULOSIS, TROPICAL MEDICINE AND INDUSTRIAL MEDICINE AND THE SECTION OF RADIOLOGY AND RADIOTHERAPY.

MEETINGS of the Section of Medicine, the Section of Public Health, Tuberculosis, Tropical Medicine and Industrial Medicine and the Section of Radiology and Radiotherapy were held to discuss (*a*) coalminers' pneumonokoniosis, (*b*) the minimal tuberculous lesion.

Diagnosis and Management of Coalminers' Pneumonokoniosis.

DR. O. S. HIRSCHFELD (Brisbane) read a paper on pneumonokoniosis in coalminers. He said that the investigation and diagnosis of the disease had been neglected for many years. The subject had been shelved, with the statement that coal dust did miners no harm and probably protected them against infection with tuberculosis. This complacence was rudely shattered by a radiological survey

extending over many years, which showed that coalminers undoubtedly had changes in their lungs and that the condition could become disabling. The early radiological changes were described as "reticulation", and there might be a subsequent increase in the severity of the pneumonokoniosis and also there might appear progressive massive fibrosis, which was considered to be due to superadded tuberculosis. Extensive investigation, radiological, pathological and histological, now ensued. The condition was thought to be due to the silica content of the coal seams, but that was incorrect; undoubtedly coal dust inhaled into the lungs did cause fibrosis, and the radiological and histological picture was different from that of silicosis.

Observation of a large number of subjects of pneumonokonosis, which was found not only in coalminers, but also in coal trimmers engaged in the handling of coal, suggested that many men could continue work with little or no increase in their signs or symptoms unless they developed progressive massive fibrosis, which soon disabled them. Therefore, it was essential that there should be regular reexamination of all miners.

At first great emphasis had been laid on the appearance of nodulation in the X-ray films, and certification was made dependent on this; but histological investigation had shown that nodulation frequently led to a local focal emphysema, which could not be diagnosed radiologically, but which undoubtedly caused great disability and almost certainly led to death from failure of the right side of the heart.

Miners had become conscious of the dangers of dust, and there must be a concerted plan for their regular examination. If the certification and investigation were not carried out by experts, many men would be told that they had pneumonokoniosis frequently on the basis of technically poor X-ray films, in which normal lung markings were grossly exaggerated. Delay in determining the condition in these cases was harmful; the miner was apt to acquire a neurosis, and it had to be remembered that the middle-aged or elderly man who was away from work for two or three months was likely to become permanently unfit for heavy physical work.

The diagnosis of pneumonokoniosis could be a matter of great difficulty. The subjects presenting gross X-ray changes caused no worry; but the miner who complained of dyspnœa with more or less negative X-ray findings needed great clinical judgement. Loss of chest expansion was always suggestive; but care had to be exercised, and measurements could be most unreliable if the claimant was cheating. Exercise tolerance tests were helpful; but there again the test could be vitiated, and it was suggested that the test should be carried out in such a way that the man was not conscious that his condition was under observation. So far, no satisfactory physiological test of lung function had been devised.

Undoubtedly the miner who was dyspnœic owing to focal or gross emphysema was suffering from pneumonokoniosis. Miners with congestive heart failure presented another diagnostic problem, and it was held that investigation should be made not only into the incidence of heart failure amongst working men, but also into the question whether long-continued hard work was an ætiological factor apart from the presence of changes in the lungs due to dust.

When it had been determined that a man was unfit to continue work as a miner, facilities must be made available to reeducate him to follow another occupation. For young people this was easy; for the man aged over forty-five years the general experience was that it was extremely difficult.

The greatest contribution to the problem of pneumonokoniosis lay in prevention. All possible precautions must be taken in mines to overcome the dust problem.

DR. F. V. MUNRO (Sydney) read a paper on the radiological diagnosis of pneumonokoniosis. He began by stating the definition of the disease that had been permitted by the third International Conference of Experts on Pneumonokoniosis: "Pneumoconiosis is a diagnosable disease of the lungs produced by the inhalation of dust, the term dust being understood to refer to the particulate matter in the solid phase, but excluding living organisms." Dr. Munro said that the experts had stressed the fact that the appearances in a radiograph in a case of pneumonokoniosis were not necessarily related to the severity of the disease. The diagnosis of pneumonokoniosis depended upon (i) a history of exposure to any particular dust hazard, (ii) a full clinical examination of the patient, and (iii) the radiographic findings. An X-ray film of good quality provided the best and surest method of diagnosing pneumonokoniosis during life. The first recognizable radiographic sign in the lungs was the appearance of small opaque areas in the postero-lateral aspects of the upper lobes and in the apices of the lower lobes, usually seen in the second, third or fourth intercostal spaces in the middle longitudinal zone of the lung. The opacities might be minute or small, and the full extent of the lung markings was still visible. Dr. Munro then referred to the importance of excellent quality in the radiographs, to the recommendations made for the standardization of X-ray films and to the radiological classifications that had been formulated. In that connexion he mentioned the work of C. M. Fletcher, B. D. Oldham and C. E. Eddy. He discussed factors recommended, and said that a fully rectified X-ray unit with a rotating anode tube with a focal spot of 2·0 was best; the tube-film distance should be 60 inches, and the film of standard speed, and high-definition intensifying screens should be used. The kilovoltage varied with the thickness of the patient. The milliamperage varied from 200 to 400, and the exposure time would not be more than one-tenth of a second. A synchronous timer would be used up to 200 milliamperes; above that an impulse timer was necessary. Standardization of development demanded a temperature of 65° F. for five minutes and a good contrast developer. Dr. Munro referred to the technique of fluoroscopic examination of the patient, and to the value of stereoscopic films, of mass radiography in the primary selection of patients for further investigation, of tomography, and of progress X-ray films if the technical factors of standardization approached an even density. He stressed the need for all X-ray films to be clearly marked with the patient's full name, the date of examination, the patient's age and occupation, together with information about the technique employed in the taking of the films. He discussed in detail the work that had been done on the interpretation of X-ray films in pneumonokoniosis, and set out the main facts concerning the suggested international scheme of classification of films that had been submitted to the International Labour Organization. The scheme provided for the following two main classes of films: (i) pneumonokoniosis with discrete opacities, (ii) pneumonokoniosis with coalescent or massive shadows. Under (i) three main categories were proposed, and a fourth for films in which the appearances prevented them from being placed in any of the main categories. The categories were determined by the distribution and extent of the opacities, and were designated 1, 2, 3 and *X*. The categories under (ii) were determined on the basis of the extent and density of the coalescent or massive shadows, an extra subdivision being allowed for films revealing gross distortion of the bronchial tree and the pulmonary parenchyma; they were designated by the letters A, B, C and D. Dr. Munro discussed the value and the limitations of this recent classification. Referring to the differential diagnosis, he mentioned difficulties associated with miliary tuberculosis, mitral disease, miliary carcinomatosis, septicæmic miliary foci, Boeck's sarcoidosis, pulmonary mycoses, tropical eosinophilia and Hodgkin's disease. He pointed out that artefacts might occur during the taking or processing of the film, so that a review would be necessary. Calcified parietal pleura might simulate massive fibrosis. Other conditions that might produce consolidation were bronchopneumonia, bronchiectasis, lung abscesses, hydatid disease, dermoid cysts, fibromata, bronchogenic carcinoma, and secondary carcinomatous and sarcomatous lesions in the lungs.

DR. W. E. GEORGE (Sydney) described the methods used by the Joint Coal Board in controlling dust in coal mines in New South Wales and in dealing with affected employees in the industry.

DR. G. C. SMITH (Sydney) laid stress on the necessity for post-mortem examination of coalminers, as he considered that only by such examinations would it be possible to correlate the pathological, clinical and radiological features of pneumonokoniosis.

DR. DOUGLAS ANDERSON (Sydney) said that in ascertaining the cause of breathlessness it was of use to remember that a breathless patient with pulmonary fibrosis could lie flat on a couch, while one dyspnœic from failure of the right side of the heart could not.

The Minimal Tuberculous Lesion.

DR. COTTER HARVEY (Sydney), discussing the minimal tuberculous lesion, said that it was a recent concept based on radiological definition. A lesion was minimal if the radiological shadows occupied an area of not more than two intercostal spaces and if there was no cavitation. The clinician, presented with a patient who might have such a lesion, had to answer two questions: (*a*) Is it tuberculous? (*b*) If so, is it active? Those might be simple or very difficult to answer; but in any case he had to lean on his colleagues the bacteriologist and the radiologist.

The Prophit Tuberculosis Survey in England had given much valuable information on the subject. It had confirmed the view that most of these lesions (60%) were infraclavicular in onset, that their course was infinitely variable, and that the interval between onset and symptoms might be from zero to several years. In mass surveys, three-quarters of those found to have active pulmonary tuberculosis had minimal lesions; untreated, 25% of these lesions would progress within six to twelve months, but with prompt treatment 90% would be permanently arrested.

Minimal lesions were found in six ways: (i) by routine radiological examination of persons at risk, especially nurses and medical students; (ii) by routine radiological examination of contacts; (iii) by routine radiological examination of candidates for employment; (iv) by X-ray examination of all persons seeking medical advice; (v) by X-ray examination of people with symptoms or signs of chest disease; (vi) by mass radiography. Dr. Harvey then discussed several cases in illustration of his remarks on the methods of discovering minimal lesions and on the problems in the differential diagnosis. He said that differential diagnosis offered a fascinating field, as there were many lesions which might simulate minimal tuberculosis. The minimal tuberculous lesion represented a challenge both to the clinician's clinical acumen and to his common sense. It was an increasingly important problem in the field of public health and of preventive medicine. It demanded acknowledgement as one step on the road towards tuberculosis eradication.

DR. J. COLCLOUGH (Concord, New South Wales) discussed the minimal tuberculous lesion and the radiologist's place in its detection. He said that a minimal tuberculous lesion must contain no cavity and could not exceed in total volume that amount of lung tissue which lay above the level of the second chondro-sternal junction and that of the spine of the fourth or the body of the fifth dorsal vertebra on one side, no matter what the distribution. Several lesions, if their combined volume did not exceed that limit, still constituted a minimal process. The lesion could occur anywhere, and no matter what its size, it ceased to be minimal as soon as cavitation appeared. In the minimal lesion all phases of the tuberculous process except cavitation could be seen in miniature. The X-ray shadows cast by the changes in a minimal process were similar to those seen in extensive disease and represented a similar pathological process. Tuberculosis was a dynamic entity, and therefore it was not possible to divide its shadows into a series of fixed arbitrary types. Reviewing the pathology and radiology of the minimal lesion in more detail, Dr. Colclough referred to the five distinct processes which might be found in the autopsy specimen: exudation, necrosis or caseation, the production of tuberculous granulation tissue, its conversion to dense fibrous tissue, and calcification. He said that four of these processes cast distinctive X-ray shadows, which were described as exudative, productive, fibrotic and calcific; caseous material cast no distinctive shadow. If more than one shadow type was present, those basic terms might be compounded to aid description. Around these shadows, which constituted the tuberculous lesion, were sometimes seen shadows due to the presence of a reaction in the uninvaded lung; these did not form part of the true focus. The radiologist would find that a definite shadow sequence followed the pathological changes which marked the development of a tuberculous lesion; this sequence was described in detail.

With regard to the diagnosis, Dr. Colclough said that tuberculosis might be suspected, proven bacteriologically or clinically diagnosed in the absence of bacteriological proof. The radiologist could never do more than suspect the presence of a tuberculous lesion, the physician might make a clinical diagnosis of it, but only the bacteriologist could prove it. The radiologist should use his right of suspicion to the full. In the differential diagnosis he should consider the following: (i) shadows of normal structures; (ii) inflammatory diseases, (iii) hydatid disease; (iv) infiltrations associated with tropical eosinophilia or Löffler's syndrome, Hodgkin's disease or leuchæmia; (v) focal atelectasis; (vi) reaction to a foreign body; (vii) vascular abnormalities; (viii) localized lesions due to bronchiectasis, cystic disease or pulmonary agenesia; (ix) neoplasms. Radiological technique was important, and Dr. Colclough stressed the necessity for using postero-anterior, lordotic and lateral projections in all cases. He also freely used coned flat Bucky films and tomography. The radiologist and also the physician should be aware of the capabilities and the limitations of each radiological technical method available; misconceptions and errors in interpretation would thus be minimized. The radiologist's report consisted of two parts: (i) a descriptive section dealing with the shadows seen; (ii) a statement of the radiologist's opinion as to their meaning. Confusion should be avoided. Simple language should be used, and terms derived from clinical medicine or pathology should be avoided. In conclusion Dr. Colclough said that adequate control of the disease depended on its early detection; all shadows for whose presence the radiologist could not account must be regarded as due to active tuberculosis until proved otherwise.

DR. MICHAEL WILSON (Melbourne), in a paper on laboratory aids in the elucidation of the minimal tuberculous lesion, said that the lesion was usually discovered in one of three ways: (i) through subjective symptoms reported by the patient; (ii) by conversion of the patient's response to the Mantoux test from negative to positive; (iii) during routine radiological examination. When the aid of the bacteriologist was invoked he was never able to declare that the condition was not tuberculosis; at some stage in every case of early tuberculosis all his investigations gave negative results—during the period when the lesion could be said to be "closed", the period between the lodgement of the infecting dose of organisms and the liberation of their descendants into the lumen of the respiratory tract. Dr. Wilson pointed out that the absolute diagnosis of tuberculosis demanded the isolation and identification of virulent *Mycobacterium tuberculosis*; the bacteriologist's task was to seek the organism in discharges from the lower part of the respiratory tract mixed with a variable amount of bronchial and oral flotsam and jetsam. Dr. Wilson then discussed in detail some current laboratory procedures. Mentioning first direct examination, he referred to the acid-fastness and alcohol-fastness of the tubercle bacillus, and pointed out that other bacilli had similar properties. Tubercle bacilli were easily missed if the lesion was minimal; but the recent introduction of fluorescence microscopy had made for much greater ease and accuracy. In addition the technique of staining had been "streamlined". In examinations of sputum careful selection of the tiny amount for smear preparation was important. Dr. Wilson, in referring to "concentration" methods of sputum examination, said that the question whether they were worth while was still undecided. Culture was more sensitive than direct examination; but *Mycobacterium tuberculosis* was a slow grower, and faster-growing "competitors" had to be first eliminated by treatment with chemicals. Guinea-pig inoculation was another slow but

relatively sure method of detecting the organisms when only small numbers were present. Dr. Wilson said that the investigation of patients who were suspect required, first, direct examination of three or more sputum specimens; if negative results were obtained, three fasting gastric contents were obtained, and each was submitted to culture and possibly to animal inoculation (direct examination of gastric contents might give a "false positive" result). The investigation outlined was suitable for case-finding surveys; in some establishments the examination of laryngeal swabs had been found useful. Bronchial lavage might possibly cause dissemination by way of the bronchial tree. Dr. Wilson also mentioned the method of dealing with pleural effusion, and made a number of observations on the points requiring care in the collection of specimens. Finally, in regard to streptomycin sensitivity, he said that it could be tested in relation to any specimen found to contain tubercle bacilli; a report on the sensitivity of the organism might be available within a week.

DR. H. WUNDERLY (Canberra), in opening the discussion, said that "the minimal tuberculosis lesion" was a radiological definition meaning that radiologically the lesion was minimal in extent, but that did not mean that in any given case the condition was minimal in importance. A decision regarding the true significance of a lesion could be reached only after considerable investigation and observation. The classification in general use—"minimal", "moderately advanced" and "far advanced"—was a peculiar one and it was understandable that many people thought that the first class consisted only of early lesions. It had, however, been pointed out by the opening speakers that, despite the fact that at times the lesion was so minimal that it could not be demonstrated radiologically, the bacteriologist succeeded in finding the mycobacterium in sputum or in fasting gastric juice. Dr. Reginald Webster had told him of five nurses whose response to the Mantoux test had changed from negative to positive, and who had clear radiographs of their lungs, but from whom, on more than one occasion, tubercle bacilli had been cultured.

Dr. Wunderly supported Dr. Colclough in his stressing the necessity of having more than one radiological "view" before the "all clear" could be given. The antero-posterior lordotic view was of value in the examination of the great majority of minimal lesions and a lateral view of help in clearing up uncertainties about shadows in the hilar and basal areas. It was refreshing to hear a radiologist say that his report should be divided into two parts, (*a*) a definition of what he saw and (*b*) his opinion of the probable cause of what he had described; so often the radiologist made statements which should be left to the bacteriologist and the clinician. The essential branches of investigation were clinical, radiological and bacteriological, and without the closest liaison between these three branches a correct decision could not be reached regarding the importance of radiological findings.

Dr. Wunderly said there were five radiological manifestations of "early" pulmonary tuberculosis: (i) a collection of dots, usually five or more in number, situated just below the apex; (ii) subclavicular infiltration—the "smudge" opacity; (iii) infiltration, triangular in shape, at the periphery of the base of the right upper lobe, showing as a triangular opacity above the interlobar septum; (iv) filling in of the costo-phrenic angle with the opacity extending upwards along the lateral thoracic wall, that being often due to a commencing pleural effusion; (v) bronchopneumonic patches in the lower zone. He was not so concerned with the calcified lesions, although at times it was almost impossible to differentiate the shadows cast by calcified and caseous lesions; nor was he concerned with those lesions which appeared as fibrous streaks and strands, except when serial radiographs showed alterations in appearance. In other words, it required a series of radiographs to show whether a condition revealed was stable or otherwise, and it was instability which was so important.

Dr. Wunderly made a plea for the more general use of the Mantoux test, performed with a freshly prepared solution of tuberculin and for the "reading" of the test by the finger, a positive reaction being an area of infiltration or œdema five millimetres or more in diameter, and indicating that the lesion being investigated could be tuberculous in origin, whereas a "negative" reaction should lead to a search for another cause. The possibility that a lesion was tuberculous was not ruled out by repeated failure of the bacteriologist to demonstrate the tubercle bacillus, for example, in tuberculomata, and those were cases in which only thoracotomy could decide between a diagnosis of tuberculosis and carcinoma. When once the ætiology of a lesion was determined, decisions regarding treatment were equally important and sometimes even more difficult to make. Was the patient to be allowed full employment with or without reexamination at a later period and with or without a rest régime? Was he to be further investigated and treated? If he was allowed limited employment, in what was was it to be limited?

In Dr. Wunderly's opinion occupations in hot humid atmospheres, heavy manual work, food handling and dusty occupations, especially where there was a silicious element, should be prohibited. If active treatment was to be employed, what was to be its nature? Was it to be properly prescribed rest? Was collapse therapy to be used? Were streptomycin and "P.A.S." to be given?

DR. D. R. W. COWAN (Adelaide) said that nowadays the "minimal lesion" was a major problem to all those in charge of chest clinics, and he supported Dr. Wunderly in his advocacy of Mantoux testing. Of 500 nurses whose response to the Mantoux test had converted from negative to positive, most showed nothing abnormal, and a few a minimal lesion, but because those patients were symptomless they should not be disregarded and ideally they should be rested in bed and carefully watched. In Adelaide the results of treating young Mantoux-positive infants with "P.A.S." and streptomycin were impressive, and in 40 such cases there had been no deaths. He was of the opinion that if streptomycin with "P.A.S." would cure miliary tuberculosis, it should certainly "clean up" the early case.

DR. A. H. PENINGTON (Melbourne) said the question of the minimal lesion could be resolved to two parts—diagnosis and treatment—and in considering treatment there were two classes of patients—those in whom the time of appearance of the minimal lesion was known, for example, nurses, and those found in routine X-ray examination the time of onset of whose lesion was not known. In caring for members of the second group, he considered it wise to keep them under close observation and, if possible, to allow them to lead a normal life.

DR. F. GUY GRIFFITHS (Sydney) said he knew of several patients with early lesions treated as ambulatory patients with tuberculin with good results.

DR. W. J. NEWING (Melbourne) said that the management of small early lesions required fine judgement to avoid on the one hand the development of phthisiophobia and, on the other, tragic results from lack of care. In exemplification he quoted the case of a young woman misdiagnosed as tuberculous ten years ago and still convinced that she had the disease and, in contrast, the veteran of the first World War who, disregarding his cough, trained enthusiastically with the Volunteer Defence Corps and later infected his two children.

DR. H. M. RENNIE (Sydney) considered that it was the responsibility of the clinician to make the final diagnosis with aid from the radiologist and the bacteriologist. In his opinion bronchial washings for diagnostic purposes could be taken without risk.

DR. O. HIRSCHFELD (Brisbane) said that in Queensland every patient with tuberculosis could be admitted to hospital and it was now his practice to treat all patients, those with early and those with late infections, with streptomycin. In no case had he had a bad result, in some he had had indifferent results, but in early cases infections did clear up and were arrested, with an enormous saving in time of treatment. He considered that the attitude that streptomycin must be reserved for emergencies was a scandalous one.

DR. J. P. MAJOR (Melbourne) discussed the problem of dealing with patients in whom it was impossible to tell on the first X-ray examination whether the lesions were new or old. If such patients felt well, it was his practice to allow them to continue with their work and to lead a sensible life, with adequate sleep, good food, *et cetera*. He did not appreciate radiological reports which stated "Pulmonary infiltration indistinguishable from pulmonary tuberculosis", as in many cases it could equally well be stated "indistinguishable from carcinoma".

DR. E. SILBERSTERN (Westwood, Queensland) said that he had reached the conclusion that the term "minimal lesion" should be abandoned, as it did not represent a nosological entity, but a conglomeration of lesions which were quite different in respect of their age, stage of development, mode of origin and pathological characters. He preferred to use terms which indicated whether the lesion was recent, old, caseous, fibro-caseous, fibrous or progressive. He asked Dr. Colclough on what radiological signs on a single film he would reach a decision regarding activity or inactivity.

Dr. Harvey, in reply, said that the first Mantoux test was of increasing importance, as more and more young people in Australia were now "Mantoux-negative". He deplored the indiscriminate use of streptomycin, as it had not yet been proved that "P.A.S." prevented the development of streptomycin-resistant organisms. He felt that the reservation of streptomycin for emergencies was not a scandal and in that was in accord with the views of its discoverers. He regarded minimal lesions with great suspicion, especially in young women, and it was his experience that contacts, after becoming "Mantoux-positive", broke down more readily than those who had not knowingly been contacts of patients with active lesions. He was convinced that the hope for better results in the future lay in more team work and more collaboration between radiologists and clinicians.

Dr. Colclough, in reply, said that at the Repatriation Hospital, Concord, all members of the staff who manifested Mantoux conversion were examined radiologically, but in few of the cases did the lesion break down. If asked "from which radiological sign do you conclude activity on a single film", his answer would be "none", as it was only from the demonstration of spread of lesions in serial radiographs that definite conclusions could be drawn, and even a radiologically stationary lesion could be highly active. He crossed swords with Dr. Major in his reference to reports. If the radiologist said "This man has tuberculosis", then he was likely to be believed and the patient "tagged" for ever more. If the radiologist used the phrase "indistinguishable from", a different final diagnosis could be arrived at, and it was particularly important in repatriation practice for the radiologist not to affix a firm label as the result of his own findings. It was safer, too, for the radiologist to suggest that tuberculosis be considered rather than report "an unresolved pneumonia" of which the patient might die in three years.

Dr. Wilson, in reply, said it was now possible to determine streptomycin sensitivity in one week and, in his opinion, if the organisms were found to be susceptible, streptomycin should be used freely.

SECTION OF MEDICINE AND SECTION OF MEDICAL LITERATURE AND HISTORY.

History as the Basis of Medical Education.

A MEETING of the Section of Medicine and the Section of Medical Literature and History was held to discuss "History as the Basis of Medical Education".

PROFESSOR DOUGLAS GUTHRIE (Edinburgh) had forwarded a paper in which he discussed history as the basis of medical education. He said that the greatest need of medical education at the present time was some common ground upon which all the various sciences might meet. History, and history alone, could provide such a meeting place. The historical approach to medicine was not greatly favoured, although the most logical introduction to any branch of knowledge was a study of its history. The objection might be raised that medicine, like science, had advanced so rapidly during recent years that it had been changed almost beyond recognition, and it might be asked of what value to the medical student were, for example, the aphorisms of Hippocrates. Hippocratic learning was of very little use as a substitute for modern knowledge; but as a basis and foundation of present-day medicine it was of incalculable value. Many of the leading scientists of the present time viewed with concern the fragmentation of knowledge called specialism, which was more to be deplored in medicine than in science, since medicine must ever be an art as well as a science. There was great need for a stocktaking of the present situation—great need for each special branch of medicine to consider how its collection of knowledge might be linked up with knowledge in other fields. "Integration" was the key word; but the question was how integration was to be achieved. The answer lay partly in a sounder knowledge of the basic sciences and the basic arts. The gulf between medicine and the humanities was far too wide, and was becoming steadily wider; history, if properly taught and used, could solve the problem by bridging the gap. Medicine was surely the most intimately humanistic of all the humanities; it could never be wholly a science. Every student should know something of the history of his own medical school. Local medical history was a source of great interest and stimulus. The medical student ought to be familiar with the heritage to which he was the heir. Dr. Guthrie advocated the writing of a history of the medical schools and hospitals of Australia and New Zealand. All over the world there was a growing interest in the history of medicine, the result, perhaps, of a desire to escape from the bonds of technicality and to reinfuse the humanistic ideal into the art of medicine. Many sources were available; the history of medicine was a many-sided subject. Dr. Guthrie then mentioned a number of the routes by which one might with advantage approach the subject. He said that every university and medical school should have a place in the curriculum for the history of medicine, not as a compulsory subject or as an exhaustive and complete course of lectures, but rather as a series of lectures giving the main outlines and stimulating the student to continue the study for himself. Furthermore, the courses of instruction in surgery, medicine, obstetrics and so on ought each to have at least one lecture devoted to the history of the subject. The world was in a sorry state; but no one seemed to have realized the power of medicine as a factor in the reconstruction towards which all were striving. Medicine, at once scientific and humanistic, might hold the key to the integration and unification of knowledge which were the first steps towards a harmonious advance. Yet without history the effort was vain, because, as Trevelyan had stated, history was the cement which held together all the studies relating to the nature and achievements of man. The medical man could never be a completely detached observer or onlooker. He was human and subject to the same frailties and troubles as his patients. Only by the study of history could the medical student secure the comprehensive view which was certainly needed if he was to acquit himself well under the cross-examination of his patients. Such a study was not an extra task but a recreation.

DR. DOUGLAS ANDERSON (Sydney) said that all shared the regret of Professor Guthrie that he could not present his paper in person, as many who knew him through his book on medical history would have liked the opportunity to meet him in the flesh. In his paper, Professor Guthrie had made one or two suggestions. The first was that someone should write the history of the Australian medical schools. Dr. Anderson pointed out that so far as Sydney was concerned, Dr. Lovell had written a history of the medical school up to 1933, and Dr. F. Watson had done the same for Sydney Hospital up to 1911. Sir Charles Blackburn, in his post-graduate oration on the life and times of Sir Thomas Anderson Stuart, had also made a valuable contribution to the early history of Sydney's medical school. However, Dr. Anderson thought that there was still room for a comprehensive medical history, and he hoped that some local medical club which had

accumulated funds might offer a prize for an essay on the subject. Secondly, Professor Guthrie had suggested that they might find a place in the curriculum for medical history. In Sydney, Dr. Keith Macarthur Brown conducted such a course annually for undergraduates. Medical history was an acquired taste which generally came late, and they should do everything possible to cultivate it in younger men. They should feel grateful to Professor Guthrie for his reference to Dr. Robert Scot Skirving and to Dr. W. E. L. H. Crowther.

DR. J. M. DWYER (Adelaide) said that the Adelaide Medical Students' Society had a plan whereby at each of their meetings, of which there were three annually, a biography of some man with whom there was still living contact was presented. Already papers on the lives of Stirling and Cleland had been presented and printed in the society's review. In five years' time those papers would form a book giving a comprehensive history of the Adelaide medical school. Dr. Dwyer suggested that the method might be more generally employed.

PROFESSOR H. K. WILKINSON (Brisbane) said that in Brisbane they had introduced a course of lectures on the history of medicine in the year prior to the recent war. Unfortunately it had had to be dropped during the war period and had not yet been reintroduced. He said that the annual Jackson Lecture in Brisbane was devoted to the history of medicine in Queensland and had been in existence for the last fifteen years. They were very much alive to the importance of the history of medicine, as it provided a cultural outlet for their medical students.

DR. ATHOL ROBERTSON (Brisbane) said that he had been distressed at the medical students' lack of knowledge about men whose names had been applied to clinical features, anatomical structures, syndromes, *et cetera*, in medicine. He said he had conducted a type of historical fifth column by asking students, whenever occasion arose, who were such men as Charcot, Heberden, Osler, Hunter and the like. All clinical and academic lecturers could in that way maintain more than a passing interest by students in men who had left their names on various protuberances and clinical signs.

SIR CHARLES BLACKBURN (Sydney) said that at Sydney they had been trying to develop an interest in medical history, and he thought it was a pity that they could not persuade someone to write a history of medicine of much wider scope than those at present available; for example, the life of Hippocrates should be set in the social environment of the times in which he lived. In that way a more lively interest would be aroused in history in general and in medical history in particular.

DR. J. KEMPSON MADDOX (Sydney) differed from Professor Guthrie on a few points. He did not think that a chair of medical history was desirable, as that involved the introduction of a compulsory course in the subject. In the present days of specialism, which despite Professor Guthrie's lament had come to stay, it was only the historical specialist who could study medical history in the way Professor Guthrie would wish. It would be better for the specialists in individual subjects to introduce students to the history of their own particular specialty. Dr. Maddox said that Sydney had been fortunate in having as its Professor of Medicine a man of such wide culture as C. G. Lambie, who was tireless in his efforts to arouse an interest in medical history.

DR. L. P. WINTERBOTHAM (Brisbane) said that Osler had stressed the need to go back through the centuries to see what the medical man of past ages had thought, and it was extraordinary that Osler had found the time to read as widely as he had done on medical history. Dr. Winterbotham thought it wise and necessary that biographies of Australian medical men should be written while they were still alive.

DR. A. S. ELLIS (Brisbane) said that in the present days of change, it was most important that medical history should be studied by students.

DR. G. MURPHY (Brisbane) spoke of Professor Bostock's contribution to medical history in Queensland by his paper on the history of mental hygiene in Queensland.

DR. W. L. CROWTHER (Hobart) said that he had had a letter from Dr. K. S. Macarthur Brown, in which he stated that he gave twelve lectures annually to medical students and that more than 70% of them attended voluntarily. The firm of "Ciba" had always had a great interest in medical history and published a quarterly brochure in French on that subject. An English version of the brochure was printed in America and both publications might be obtained by application to the firm. Dr. Crowther thanked those who had attended the meeting and said that he would write to Professor Guthrie to tell him of the great interest which his paper had aroused.

THE SECTION OF SURGERY AND THE SECTION OF RADIOLOGY AND RADIOTHERAPY.

Carcinoma of the Breast.

A MEETING of the Section of Surgery and the Section of Radiology and Radiotherapy was held to discuss carcinoma of the breast.

DR. B. T. EDYE delivered his address as President of the Section of Surgery at this meeting.

Dr. Edye dealt first with the present conception of carcinoma of the breast and its modern treatment. He mentioned that surgery of the breast was dominated by the fear of the actual presence of cancer or of its ultimate development. He gave a brief review of the principal symptoms of which patients fearful of cancer complained—pain, swelling, deformity and discharge from the nipple—and he emphasized the necessity of resorting to surgical measures and pathological examination in all doubtful cases. He said that a tumour might be first detected in the axilla; that tumour might be due to secondary involvement of glands with a small primary tumour in the breast, or it might be a primary growth in a portion of breast tissue situated in the axilla. Referring to discharge from the nipple, Dr. Edye said that if the site of the discharge could be localized in the form of a papilloma or dilated ducts, excision and pathological examination were advisable. If the source could not be located and the discharge was not blood-stained, a course of deep X-ray therapy might check it. If not, simple mastectomy might become necessary. If an excised nodule showed evidence of malignancy, radical amputation was advised.

Dr. Edye then enumerated the types of investigation that might be undertaken—transillumination, aspiration of cysts, radiographic examination, aspiration biopsy, and finally surgical intervention, incision or excision and examination by the immediate frozen section method. Surgical incision was used in doubtful cases at the time of operation. A short incision was made directly over the growth, then into it. In the great majority of cases the nature of the tumour was at once apparent. If the presence of carcinoma was proved, the wound was carbolized and sutured, the skin and instruments were sterilized, and a radical operation was performed at once. That was the method practised by Professor Grey Turner and Sir Alexander MacCormick. Wide excision was practised by most surgeons as the method considered least likely to cause dissemination of tumour cells. As a general plan Dr. Edye was averse to any two-stage method. The days of waiting for the pathological report were days of mental torture for the patient.

Dr. Edye then referred to the question of premalignancy. He said that it was the opinion of most surgeons experienced in disease of the breast that large cysts seldom if ever resulted in malignant disease, and that simple mastectomy with the object of preventing future malignant change was not justified. According to Adair, papillomatosis carried no danger of future malignant disease. However, a palpable papilloma should be excised and examined. Active hyperplasia of the cells lining microscopic cysts was difficult to distinguish from malignant neoplasia. When such a condition in a young person had been considered malignant by the pathologist, the problem should be discussed with him. It might be decided to do

nothing further except to keep the patient under observation. In the treatment of older patients radical mastectomy might be advised.

Turning to treatment, Dr. Edye discussed the progress made since Halsted had published his results in 1894, and the methods employed today. For growths confined to the breast radical mastectomy was employed. When the axilla was invaded lightly or moderately, radical mastectomy was combined with radiotherapy. For more extensive growths deep X-ray treatment alone was recommended. In practically all radical mastectomies enough skin was preserved to allow closure, and undue tension was relieved by multiple skin punctures. Involved supraclavicular glands were not removed, as they indicated inoperability, and deep X ray treatment was recommended. Wide excision of skin was not practised, for if it was involved the outlook for the patient would be unfavourable. The preservation of the function of the arm and avoidance of œdema were important considerations. The clavicular portion of the *pectoralis major* was preserved, and the subscapular vessels and nerves and the nerve of Bell were retained. The best type of anæsthesia was light "open ether" with "Pentothal" induction; other forms of anæsthesia encouraged oozing of blood. Early use of the arm, early movement in bed and early ambulation were encouraged. Serum that collected was aspirated daily, but the opening was allowed to seal itself in the intervals, so that the field was kept dry.

Referring to radiotherapy, Dr. Edye said that it was not used as a routine measure for stage I patients; for stage II patients it was used post-operatively; and for patients in later stages it was used alone. The results of irradiation varied according to the sensitivity of the tumour cells; some benefit was invariable. Radiation therapy was valuable when there were secondary deposits in bone, and by causing recalcification it would avert fractures, vertebral collapse and paralysis due to compression of the cord. McWhirter, of Edinburgh, claimed better five-year results from the employment of deep X-ray therapy following simple amputation of the breast. He stated that there was less risk of dissemination of cancer cells, and that radiotherapy was more effective than surgery in the treatment of the axilla.

Dr. Edye then mentioned testosterone. He said that it caused recalcification of involved bones, relieved pain and imparted a feeling of well-being. The results of treatment by surgery under the best conditions were a five-year survival rate of 82% to 84% for stage I patients and of 39% to 43% for stage II patients (Steinthal). The survival rate was halved when the axilla was invaded.

With regard to his own results, Dr. Edye said that out of 593 patients 369 had been treated and 250 traced. There had been four operative deaths. For patients in stage I the survival rate at five years was 79·5% and for stage II patients 38·2% (Manchester classification). In the more advanced stages deep X-ray therapy was used in addition. The favourable results in stage I emphasized the necessity for proper and early treatment. To improve the results women should be encouraged to consult their doctor at once when breast symptoms arose, and in any event to be examined once a year at least. There were various unfavourable features in prognosis. Pregnancy was especially unfavourable; but Adair stated that 25% of his patients reached the five-year survival period. Dr. Edye said that he had one patient alive eight years after operation, which had been performed during the seventh month of pregnancy. Metastases had occurred a few years later, but had been kept in check by deep X-ray therapy. Heredity was also noted as an unfavourable factor; as an example three sisters were under treatment at the one time suffering from carcinoma of the breast. Dr. Edye gave examples of the favourable effect of radiotherapy on prognosis.

Dr. Edye, in conclusion, exhorted practitioners never to treat lesions of the breast lightly, especially in patients aged over forty years. Cancer of the breast was a highly fatal disease, as was shown by the fact that 930 women and seven men had died from the disease in Australia in the year 1946, the last for which figures were available.

DR. E. W. FRECKER (Sydney) discussing the treatment of carcinoma of the breast, said that it was predominantly a surgical concern. But the objects of the technically perfect classical operation were not always attained, as was shown by the occurrence of local metastases in the wound in roughly one-third of the surgical failures. To remedy that defect radiotherapy was called upon, as either a pre-operative or post-operative addition, to restrain or sterilize any remnants of tumour that the surgeon might disturb or leave. Radiotherapy was also called upon to care for instances of the disease which were beyond the surgeon's aid, in the hope of cure, palliation or reprieve. Lastly, radiotherapy was called upon to deal with recurrence or spread of the disease. Any improvement in the results of treatment was likely to come from improvement in ancillary methods, such as radiotherapy, hormonal control and possibly chemotherapy; surgery appeared to have reached the limits of its art in cancer of the breast. But at present it had to be recognized that the major attack upon early and uncontrollable carcinoma of the breast was surgical. The radiotherapist had a difficult problem. Modern radiotherapy aimed to destroy all living cancer cells *in situ* without undue harm to surrounding normal tissues; but carcinoma of the breast was a relatively (though variably) radio-resistant entity, and the allowable margins between "too much" and "too little" were narrow. After operation, also, the therapeutic field had been grossly damaged and its circulation maltreated. Radical treatment, if worth while, meant some weeks of heavy irradiation, with the production of uncomfortable reactions some weeks later and some minor skin changes later still. In post-operative treatment the radiotherapist required the following information: (i) A full description of the lesion before treatment, including the results of biopsies *et cetera*. (ii) The results of X-ray examinations of the lungs and mediastinum and of the bones where any sustained local pain occurred. (iii) Any information about the patient's general health and condition, since a radical course of post-operative X-ray therapy was a major operation. (iv) The operative findings, and particularly the results of post-operative histological examination of both breast and axillary glands. Pre-operative treatment had fallen somewhat into the discard. A pre-operative course could seldom be said to make an inoperable lesion operable; but on general principles, if pre-operative irradiation was given, it should be radical and maximal and followed by operation six weeks later, and no post-operative course should be given. Primary radiotherapy without surgery was usually given when operation was refused by either the surgeon or the patient. The radiotherapist had to decide whether radical intensive treatment held any possibilities or whether it was more fitting to give smaller doses with palliation only in view, and whether, in advanced, hopeless cases, irradiation would give relief worth the discomfort and disturbance caused to the patient. Discussing technique, Dr. Frecker referred to the value of irradiation in repeated local doses in controlling skin metastases, affected glands and particularly metastases in bone. He stressed the fact that patients who had had a breast removed for carcinoma and who suffered from "rheumatism" or "fibrositis" should be regarded as afflicted with metastatic carcinoma until the opposite was proved. If intensive radiation therapy of a carcinoma of the breast was carried out without mastectomy, the usual result was 50% to 100% resolution of the mass and of any palpable glands; the histological findings in the breasts, if ultimately removed, suggested arrested but not cured disease, which might remain stationary for years. Referring to the "honest error", the case in which a seemingly innocent tumour after local removal was found to be a carcinoma, Dr. Frecker said that in his experience such patients did well if referred for radiotherapy, possibly because the disease was in an early stage. With regard to results, Dr. Frecker pointed out that surgery selected the earliest cases and radiotherapy helped with some of them, alone bearing the burden of the whole unfavourable residue. Therefore no possible worthwhile comparison could be made between surgical and radiotherapeutic results. The only worthwhile statistics were those including every case of carcinoma of the breast occurring

in a given area, whether treatment was given or not. Statistics taking no account of the discarded material were subject to immense fallacies. Dr. Frecker then discussed the results obtained by McWhirter, of Edinburgh, whose statistics conformed to the necessary requirements. McWhirter's figures covered two periods of five years. In the first period the treatment of election was by radical mastectomy with post-operative irradiation, the remainder of the patients receiving radiotherapy alone; at the end of the period estimation of the results suggested that dissection of the axilla increased the incidence of distal metastases. In the second five-year period the treatment of election was by simple mastectomy with post-operative irradiation of the whole area; no glands were excised and the axilla was dealt with solely by irradiation. A surprising improvement in the results obtained by simple mastectomy was evident; the absence of operative trauma in the axilla allowed better irradiation of that area, œdema of the arm did not occur and post-operative recovery was quicker. The limits of operability were extended, as the state of the axilla did not enter into consideration.

DR. ALAN LEE (Brisbane) opened the discussion by referring to the changing attitude in the treatment of carcinoma of the breast over the years. In his own case, in the middle 1930's he had used pre-operative irradiation followed by simple mastectomy; but he had abandoned that practice as a result of the impressions gained during a tour of the United States of America before the second World War. Since that time he had practised radical mastectomy, and he was impressed with the results, believing that about two-thirds of the patients with early lesions were alive and well five years afterwards. He rarely used deep X-ray therapy post-operatively. However, the papers read indicated that there was a field for each method of treatment. Dr. Lee also referred to the so-called pre-malignant conditions of the breast, and he considered that cystic mastitis called for operation only for purposes of diagnosis, as it was not associated with carcinoma. Finally, he referred to the impossibility of giving a prognosis in any individual case.

DR. A. G. S. COOPER (Brisbane) was in substantial agreement with Dr. Frecker. He said that in stage I cases the treatment was essentially surgical, with complementary irradiation for specially selected patients, such as people in the lower age groups. In the stage III cases the field was virtually limited to irradiation, the real controversy being in relation to stage II cases. Dr. Cooper referred to the possible results which might follow discovery of a growth-promoting factor, but said that at present it was not possible to do anything more than hint at it. In the treatment of patients with very advanced lesions, castration doses to the ovaries were favoured for all female patients.

DR. T. H. ACKLAND (Melbourne), referring to the possibility of improving the figures for stage II patients, said that he had started the practice of submitting all such patients to intensive pre-operative irradiation and following it by operation in six weeks' time. Such a procedure was not found to make the operation any more difficult, and it was thought that the figures might show some improvement.

DR. V. M. COPPLESON (Sydney) was in agreement with the previous speakers except for certain details. He said that he believed that secondary deposits in the skin, wherever they occurred, should be excised, and that the area should be subsequently irradiated. He favoured the practice of implanting testosterone tablets in the skin flaps after radical mastectomy. It was difficult to give androgens as a routine at present, and the exhibition of those substances was reserved for patients with secondary deposits in bone. Dr. Coppleson finally asked for an opinion on the value of sterilization.

DR. S. C. SEN (New Delhi) summarized the impressions gained from a visit to most of the leading overseas centres. He said that as a result of that experience he favoured routine pre-operative and post-operative irradiation. That appeared to be the only method to neutralize losses due to the limitations of a surgeon's judgement and to the pathologist's inability to examine every portion of the tissues submitted to him.

DR. A. E. COATES (Melbourne) stressed the necessity for impressing on all general practitioners the fact that a lump in the breast was a serious condition. Experience with frozen section methods of diagnosis had not proved satisfactory, and Dr. Coates favoured the method prescribed by the opening speaker. He was becoming converted to the view that pre-operative irradiation was helpful in borderline cases, but expressed doubts about the benefits to be gained from hormonal therapy in the form available at the present time.

DR. C. DE MONCHAUX (Sydney) joined issue with most of the previous speakers over their attitude towards stage I patients, and expressed the opinion that all patients should receive post-operative deep X-ray therapy.

DR. S. REID (Melbourne) referred to the recurrence rate in the operation scar area and asked if it was better to remove an extensive area of skin, covering the raw area subsequently by grafting, or to suture the wound under tension.

DR. G. MASON (Brisbane) referred briefly to the work being done on the subject in Edinburgh.

Dr. Frecker, in reply, said that for various reasons five-year survival rates had to be accepted. Patients who had their skin flaps sewn under tension were a problem to the radiotherapist, as it was then necessary to reduce the doses. In so far as pre-operative irradiation was concerned, Dr. Frecker thought that since the treatment of the condition was a joint procedure, irradiation could not be employed as a routine measure until surgeons accepted the fact that its use did not make operation more difficult. It was not his practice to make a routine procedure of sterilizing female patients. Since many patients had bone metastases in the pelvic girdle, such patients were automatically sterilized when given radiation therapy.

Dr. Edye, in reply, expressed his pleasure at the amount of discussion stimulated by the papers. In answer to the question about pre-operative irradiation, he said that he had found no trouble with the subsequent operation, provided that he waited for a period of six to eight weeks; but it was that delay which provided the ground for objection to pre-operative irradiation held by many surgeons. Sterilization was always avoided, especially in the lower age group. Pre-operative and post-operative irradiation for all patients would certainly be an ideal, but that ideal could not be attained in practice, and it was necessary for the surgeon to use his judgement in selecting patients sent for irradiation.

THE SECTION OF ANÆSTHESIA, THE SECTION OF PÆDIATRICS, AND THE SECTION OF SURGERY.

Thoracic Surgery in Childhood.

A COMBINED MEETING of the Section of Anæsthesia, the Section of Pædiatrics and the Section of Surgery was held to discuss thoracic surgery in childhood.

DR. A. DISTIN MORGAN (Sydney) read a paper on anæsthesia for intrathoracic surgery in children. This was his president's address to the Section of Anæsthesia. He said that teamwork was the factor above all others that had paved the way for the advances that had been made in thoracic surgery. The surgical procedures on children requiring opening of the thorax were those on the lungs and pleura, on the heart and pericardium, and on the mediastinum and the vessels and nerves within the thorax; certain procedures in the upper part of the abdomen were better carried out through a combined thoraco-abdominal approach. Dr. Morgan said that in the selection of patients teamwork again was important; there was much merit in the method adopted in a special clinic by which all the members met to discuss all aspects of a case and to plan

each step of the management. He had in mind the special clinics at the Royal Alexandra Hospital for Children, Sydney, from which most of the patients had come. With the exception of surgical treatment of congenital circulatory abnormalities, in which early operation was often unavoidable, the best results were obtained if operation was delayed until the child was old enough to make a contribution to his own recovery; five or six years was usually the lowest limit. The preparation of the patients for operation followed much the same lines as that of adults. The anæsthetist should see and make friends with the patient. Loose teeth should be removed before operation. Hæmoglobin value, blood count, A B O and Rh classification and body weight should all be recorded. Hæmorrhage could occur so suddenly that a blood transfusion actually running was a necessity during operation. Cyanosed patients and those suffering from heart disease were placed in an oxygen tent for four or five days before operation. Children with bronchiectasis about to undergo lobectomy were taught postural drainage and had a naso-tracheal catheter passed each day for five days to suck out pus and secretions and to allow the instillation of penicillin (15,000 units in three millilitres of saline). Penicillin was also given parenterally (20,000 units every three hours for two days before operation). Premedication was used to protect the patient from psychic trauma, from tachycardia and from vagal effects. Heavy sedation was not advisable; in most cases it was important that the child should recover consciousness rapidly and cooperate by effective coughing, expectoration and deep breathing. Referring to the special requirements of anæsthesia, Dr. Morgan said that the induction should be rapid and smooth, and that the agent used should permit of high oxygen concentrations and should not cause bronchial irritation; thiopentone and cyclopropane fulfilled those requirements, while ether had many serious disadvantages, chiefly that it promoted coughing and spasm. The use of a relaxing agent with thiopentone prevented laryngospasm and assured rapid and easy intubation. Control of the depth of anæsthesia should be rapid and precise; it was achieved with cyclopropane, nitrous oxide and thiopentone. The continued use of a relaxant provided muscular relaxation and permitted light anæsthesia, which was essential to prevent tissue damage. However, care had to be taken to minimize oxygen lack when relaxing agents were used, and in that connexion Dr. Morgan mentioned the value of controlled respiration. He pointed out that rapid recovery was possible only if premedication had not been too heavy, if anæsthesia had been kept light throughout, and if the use of a relaxing agent had been discontinued at the right time. Dr. Morgan then gave details of the technique used for induction, intubation, and maintenance of anæsthesia, and pointed out the difficulties that might be encountered and the measures required to deal with them. He said that controlled respiration was established before the chest was opened, and was fully maintained until the thorax was closed again. The resumption of spontaneous breathing by the patient might cause some worry; trouble might be caused by too deep or too light anæsthesia. If there was much delay, controlled or assisted respiration should be resumed until the position was rectified. Once spontaneous respiration had been resumed, a mixture of oxygen (30%) and nitrous oxide was substituted for cyclopropane and was used for the completion of the operation. If diathermy was to be employed, a non-explosive mixture of gases had to be used. It had been found satisfactory to use a 70%-30% nitrous oxide and oxygen mixture in a bag as a basal anæsthetic, and to supplement this with thiopentone and a relaxant. Even slight degrees of depression of respiration should not be allowed to continue at that stage; serious oxygen lack might further depress an already dulled respiratory centre and cause death. Dr. Morgan then discussed some of the emergencies that might arise during the recovery stage. After removal of the tube the patient might become blue; possible causes were extreme lightness of anæsthesia with reflex breath-holding, too deep anæsthesia, too much relaxing agent, too late withdrawal of the relaxing agent or failure to appreciate the prolonged action of some preparations, or atelectasis due to the presence of a plug of mucus in a bronchus of the lung which was underneath the patient during operation. It was desirable that anæsthesia should be light enough to permit the patient to regain consciousness and speech in the operating theatre; effectual coughing and expectoration and general cooperation on the part of the patient were then possible. Dr. Morgan concluded his paper with some account of methods by which the anæsthetist could assist the surgeon during the operation, and of transport of the patient and post-operative therapy. He emphasized the need for experience on the part of the nursing staff, and for careful observation of the patient during the post-operative period.

DR. L. P. WAIT read a paper in which he reviewed his experiences with bronchiectasis. He said that the insidiousness of its onset and its slow, relentless progress led to great difficulties in early diagnosis. The success of conservative treatment depended on the early recognition of potential bronchiectasis. Preventive treatment was equally important. It was the general practitioner who had the greatest opportunity of suspecting this disease in its early stages, hence the importance of dissemination of knowledge of the disease by physicians in the teaching hospitals. Patients should be observed and treated for prolonged periods. Investigations should be thorough and complete. Medical treatment in established cases had been disappointing.

Dr. Wait discussed the causes found in his review of 223 cases (1937-1948). Chronic cough commencing in early infancy, bronchopneumonia and pertussis were responsible for the greater number of cases. Symptoms had been present for two years or more in 179 cases. The important investigations were: repeated radiological examinations of the lungs during the period of observation, bronchoscopic examination and a bronchogram. The bronchogram had distinct limitations. One could not detect the cases of potential bronchiectasis by this means. The actual mortality of bronchiectasis in the series was small, there being three deaths. Dr. Wait's review of 18 patients with bronchiectasis subjected to lobectomy showed that only three were cured. Although lobectomy might appear to be the obvious treatment in certain selected types of bronchiectasis, caution should always be exercised before it was recommended. Dr. Wait's suggestions as to those types in which benefit might accrue from lobectomy were: (*a*) bronchiectasis involving one lobe or part of a lobe, or (*b*) bronchiectasis involving one lobe and part of the adjacent lobe, or (*c*) bronchiectasis in an atelectatic lower lobe following a primary tuberculosis complex. In any one of these one had to exclude the presence of bronchiectasis in the apparently unaffected portions of the lungs. It was only after a careful follow-up over a period of at least five years after lobectomy that one could say whether the patient had been cured or not.

DR. K. HIRSCHFELD (Brisbane) read a paper on the prevention and treatment of bronchiectasis. He said that bronchiectasis was a morbid anatomical change and not a disease in itself. The condition was actually dilatation of the bronchi, and if infection was superimposed the bronchi became filled with pus. However, in "dry" bronchiectasis there was no sputum. Clinical bronchiectasis was the result of secondary changes in the dilated bronchi. The symptoms might arise after some illness or incident, or might commence insidiously; the illnesses most frequently noted were whooping-cough, measles, diphtheria, pink disease when accompanied by bronchitis, bronchitis, and influenzal bronchopneumonia. All were conditions in which the patient was producing viscid sputum in his lungs, and many were conditions in which there was some degree of bronchial spasm; they were also all infections, but no organism was common to them all. Prevention of bronchiectasis had to be based on some understanding of the ætiology and pathogenesis. Dilatation of bronchi occurred in the presence of block or obstruction in a bronchus, together with infection; it also occurred in conjunction with developmental anomalies of the heart and vessels; it might occur with gross distortions of the bronchial tree, with cysts throughout the lungs in congenital

bronchiectasis. In the common or acquired type of bronchiectasis opinions differed as to the ætiology and pathogenesis, but at least two factors were involved: infection and atelectasis. In that connexion more attention should be paid to material removed at operation than to autopsy material; the surgical material showed that atelectasis was present in a large majority of cases (up to 80%); in most some infection was present. Whatever view might be held on pathogenesis, the conditions necessary for the production of atelectasis were present in the infection which heralded the onset of bronchiectasis in many cases. It was difficult to escape the conclusion that atelectasis was the factor that occurred only sometimes, and that would explain why bronchiectasis developed only sometimes. Moreover, as atelectatic lobes might reexpand, it was obvious that the bronchi returned to normal; bronchograms showed that that was so. That bronchiectasis might spread when there was much sputum had been sufficiently demonstrated in many series. Thus, if it was accepted that the condition was progressive, prophylactic operation was indicated. Dr. Hirschfeld wondered whether there was any other explanation. If cough and sputum continued to be present, further bronchial obstruction might occur with further atelectasis, infection and bronchiectasis. But whether such spread occurred if adequate drainage was maintained was another matter. Consideration of the facts stated suggested that there was a field for the prevention of bronchiectasis, (i) by the prevention of the infectious diseases which appeared to be associated with the onset of bronchiectasis, and (ii) by adequate supervision of patients afflicted with such diseases. Atelectasis that might have occurred gave rise to few symptoms in the child, because a residual cough was common and because the child swallowed the sputum; but an X-ray examination would reveal atelectasis, and the time to find it was when it was reversible. Dr. Hirschfeld said that ideally all patients suffering from whooping-cough, measles, diphtheria or any condition in which bronchitis occurred should be radiologically examined on their admission to hospital, at any time when the course of the disease appeared abnormal, and on their discharge from hospital. If there was any change in the X-ray findings, a bronchoscopic examination should be performed. Dr. Hirschfeld believed that in such patients atelectasis might occur from obstruction of bronchus by a plug of sputum, or from obstruction of the bronchi by the pressure of glands in the hilum of the lobe, enlarged as a result of infection in the lung. He believed that all patients suffering from infectious fevers should receive antibiotics to reduce the incidence of secondary infection of the bronchi and thus of enlargement of glands. Pathologists who taught that there was a condition of unresolved pneumonia had been responsible for the failure to initiate treatment while reversal of the changes was still possible. Dr. Hirschfeld believed that, although the programme he had outlined was ambitious, it was justified. Referring to treatment, Dr. Hirschfeld pointed out that eradication of the disease, when possible, was the ideal. He mentioned the value of postural drainage and of antibiotics given by inhalation. If the patient could be rendered free from sputum by drainage compatible with a reasonable life, or if the sputum could be reduced to one or two ounces per day, conservative treatment should be persisted with. Otherwise surgical treatment by lobectomy offered a hope of cure.

DR. T. Y. NELSON (Sydney) opened the discussion. He said that it was generally agreed that the treatment of partial and unilateral bronchiectasis should be surgical, but that it was advisable to allow a long period of time to elapse for conservative treatment and preparation for surgery. In his opinion there was always some improvement after conservative treatment, and until the patient showed that improvement he should not be subjected to surgery. Some of the treatment adopted consisted of adequate postural drainage by day and by night; bronchoscopic suction had a place; and sulphonamide therapy was helpful if practised over a long period of time. Referring to the advantages of early diagnosis, Dr. Nelson said that he had been able to demonstrate from bronchograms the presence of characteristic lesions in children aged no more than two years. He was less pessimistic than Dr. Wait about the possibility of arresting the process even without surgical treatment in some cases, and he knew of a number of patients who appeared to be in good health. He had been associated with a series of some 40 patients who had been submitted to lobectomy; few of them could be classed as cured, but it was equally true that there were few of them who had not shown significant improvement. The follow-up was of the utmost importance for the benefit of the patients and for the assessment of results.

Dr. Nelson further said that he could not remember any cases in which parts of the lung became affected subsequent to adequate medical and surgical treatment. In illustration he mentioned a case in which the lower lobe of the patient's lung was removed and later the lingula of the lung was found to be involved. He thought it probable that the involvement of the lingula had been missed originally rather than that the lingula had become involved subsequently. He emphasized the point that the bronchogram should be made carefully and all the segments of the lung studied before operation was undertaken. Dr. Nelson went on to say that the usual rule was that more lung tissue was involved than appeared to be the case from the bronchographic appearances. It was true that in the age of childhood the risk of operation was less than later, but poorer post-operative cooperation by the patient probably balanced that advantage. With reference to bilateral lesions, Dr. Nelson said that he did not think the position was so clearly defined; it was necessary to be even more conservative about them, and surgical treatment was of doubtful benefit. He summed up by saying that bronchiectasis was a challenge to pædiatric physicians, and that grappling with the problem in the early stages as encountered in childhood represented the most promising approach.

DR. MORGAN WINDSOR (Brisbane) said that all the papers showed that a considerable amount of personal observation had been made with a logical approach to the subject. Dr. Hirschfeld had brought out two chief factors in the ætiology of bronchiectasis; they were collapse of the lung and infection of the collapsed portion. Dr. Windsor had been interested in the experimental work of Klotz, who had partially obstructed a bronchus of an experimental animal and then infected the obstructed segment, and had demonstrated that bronchiectasis occurred in proportion to the amount of obstruction and the degree of infection; but with complete obstruction bronchiectasis did not occur. Dr. Windsor then referred to a syndrome found in the fifth or sixth decade of life, affecting the middle lobe of the left lung, with the presence of calcified glands between the middle and lower lobe bronchi and stenosis of the bronchus; it appeared that bronchial blocking occurred first and infection followed, producing bronchiectasis. Dr. Windsor also thought that Dr. Wait's remarks on prognosis were unduly pessimistic, but it had to be remembered that the series covered the years from 1938 to 1947. It was common knowledge that, with the improvement in team work between the physician, the radiologist, the anæsthetist and the surgeon, and with better post-operative nursing and pre-operative preparation, there had been a general improvement in all directions in recent years, and they could expect better results in future.

DR. ROBERT SOUTHBY (Melbourne) said that the summary of results presented by Dr. Wait appeared to be an indictment of the delay that had occurred between the occurrence of symptoms and investigation of the condition; there was a delay of two years in one-quarter of the cases, and in one-third of the cases the delay was nine years or over. Dr. Hirschfeld had emphasized in some detail the surgical advantages of early investigation and pre-operative preparation. Dr. Southby asked for a clearer realization of the danger of bronchiectasis after removal of teeth under anæsthesia and tonsillectomy. If in those circumstances a patient did not show immediate improvement, the investigations for bronchiectasis should be undertaken forthwith. The same action should be taken when there was a pulmonary complication after measles, pertussis,

or bronchopneumonia. Dr. Southby was in agreement with Dr. Nelson on the question of surgical treatment, and approved of the contrast between its suitability in localized bronchiectasis and its relative unsuitability in the diffuse bilateral variety of the disease.

DR. D. G. R. VICKERY (Sydney) referred to a series of 120 cases from a Sydney clinic; in 30 of them bronchiectasis had followed bronchitis or bronchopneumonia, in 27 it had followed pertussis, and in 19 it had followed pink disease. In 85% of cases the history could be followed back to a disease occurring before the patient had reached the age of two years. Dr. Vickery urged that such illnesses in the early years of life should be taken more seriously and that on slight indications the patient should be treated as if suffering from bronchiectasis. Such treatment involved sleeping on an inclined plane, postural drainage, and the prophylactic use of one of the sulphonamide preparations for a winter, for a year or even for two years, as was practised for children suffering from acute rheumatism. The patients were prone to recurrence of the infection, and if bronchiectasis was present an attack on infections was of considerable assistance to the patient by preventing extension of the bronchiectatic process. Dr. Vickery was in general agreement with Dr. Hirschfeld's views.

DR. H. BOYD GRAHAM (Melbourne) added to the ætiological factors mentioned that of biological tissue inferiority. He said that shoddy lungs occurred in much the same way as other shoddy organs, such as the brain, the heart, the liver or the kidneys. The probability of some underlying tissue inferiority was illustrated by the association, in 25 out of 203 cases mentioned by Dr. Wait, of fibrocystic disease of the pancreas and bronchiectasis; it was important that the surgeons should be aware of recent knowledge acquired by physicians on the subject. Dr. Graham said that he had been surprised to hear Dr. Wait's statement that the disease progressed inexorably in all cases and that no static state was reached; Dr. Graham might not have heard aright, but Dr. Wait would have the opportunity to correct the statement if he had been misunderstood. Dr. Graham had had a number of child patients with unquestionable bronchiectasis whose condition had become static without the benefit of surgery before they reached adult life.

DR. D. G. RENTON (Melbourne) said that his contribution to the discussion was a minor technical point, of more interest to the anæsthetists than to the other members of the team; it concerned the dead space in closed anæsthetic apparatus. The dead space increased in importance as the tidal respiration lessened; therefore it was of the utmost importance when anæsthetics were given to children. If the dead space was 20 millilitres and the tidal respiration was 500 millilitres, the matter was not of significance; but when the 20 millilitres of dead space were related to a tidal respiration of 100 millilitres or less, great care had to be taken, and it was desirable to reduce the dead space. Dr. Renton showed lantern slides to illustrate the modification of the apparatus used for infants and children, by means of which the dead space was reduced to a minimum; it was a miniature Sword type circle, onto which was drafted a Water's to-and-fro can. Dr. Renton explained that it retained the advantages of each type of absorber and eliminated the disadvantages of each, and in addition it reduced dead space to the absolute minimum. That principle had been adopted entirely at the Alfred Hospital, Melbourne, by Dr. R. H. Orton for children aged up to seven years; but it was usually unnecessary for older subjects. An adult model of the modified circuit provided a corresponding degree of reduction in dead space. Dr. Renton further said that in the control of respiration he preferred the manual compression of a bag to any mechanical apparatus with taps; he believed that the hand would detect abnormalities sooner than a lever.

DR. J. WOODLEY (Brisbane) stressed the importance in anæsthesia of the prevention of post-operative collapse of the lung.

DR. J. MCCULLOCH (Sydney) asked Dr. Morgan what were the relative proportions of patients with and without sputum to whom he had given an anæsthetic. Dr. McCulloch disagreed about the ease of management of the anæsthesia in the presence of sputum.

Dr. Morgan, in reply, stressed the importance of the recognition of atelectasis. He said that in the surgical field the patient gave evidence of atelectasis first by losing the preexisting happy expression and becoming worried-looking; then followed a rise of temperature, which should arouse suspicion of atelectasis. Dr. Morgan said that he had missed reference to the importance of inflation of the lung before removal of the intratracheal tube. In reply to Dr. McCulloch, Dr. Morgan said he knew that Dr. McCulloch was aware of the fact that cyclopropane was explosive throughout the full range of its distribution during an anæsthetic administration; its use should not be tolerated in the presence of flame or when there was any risk of ignition. It was becoming increasingly common for surgeons to use the cautery or for a flame to be present when inflammable anæsthetic gases were being used, and the practice should be discontinued.

Dr. Wait, in reply, said that as a physician he was convinced that the results would not be particularly good unless the work was done by an efficient team. He thought it too early to be certain that the patients were cured, no matter how well the follow-up had been conducted, and he stressed the point that early diagnosis was of the utmost importance. Good radiography was helpful, and though improving, bronchograms were still far from ideal. In reply to Dr. Graham, Dr. Wait agreed that biological tissue inferiority was present in some of the cases, and explained that in his remarks that had been regarded as pessimistic, he had intended to convey his view that the process of bronchiectasis did not remain localized in one particular part of the lung, but spread inexorably.

Dr. Hirschfeld, in reply, said that he had omitted the relationship between bronchiectasis and fibrocystic disease because of the short time at his disposal. He, too, thought that Dr. Wait had been unduly pessimistic, but agreed that the standard of the teamwork was of the utmost importance if good results were to be obtained. In 75% of the cases in his series of operations for bronchiectasis the results had been good or cure had almost been achieved; the series included a patient upon whom he had performed pneumonectomy some ten years earlier. Dr. Hirschfeld believed that if gross bronchiectasis could be attacked by the surgeon, it should be attacked no matter how young the patient was, even if pneumonectomy had to be invoked. In only two or three of his cases had the operative results been bad, but the patients were better after operation than before; in a few other instances there had been no obvious improvement, though the surgical result was satisfactory. Adequate drainage was required, either intermittent drainage or continuous postural drainage; but the principle was honoured more in the breach than in the observance. It was practicable to carry out the drainage for twenty-two out of twenty-four hours to allow the patient to sleep and to undergo drainage, to be sputum-free and to make a good recovery: a patient was never too ill to have postural drainage, but he might be too ill not to have it. In conclusion, Dr. Hirschfeld said that no surgeon could possibly do the things he did without the application of courage, skill and knowledge by the anæsthetists associated with him.

At the conclusion of the meeting Dr. Robert Southby moved and Dr. K. Hirschfeld seconded the following motion:

> That it is a recommendation from the combined meeting of anæsthetists, surgeons and pædiatricians to the Executive of Congress that the potential risk of atelectasis and subsequent bronchiectasis in children following anæsthesia or respiratory tract infections be communicated to the profession throughout Australia.

The motion was carried without dissent.

THE SECTION OF OBSTETRICS AND GYNÆCOLOGY AND THE SECTION OF NEUROLOGY AND PSYCHIATRY.

Bearded Women.

A MEETING of the Section of Obstetrics and Gynæcology and the Section of Neurology and Psychiatry was held to discuss bearded women.

DR. ROBERT FOWLER (Melbourne) read a paper on bearded women, based on three cases that had occurred at the Alfred Hospital, Melbourne. He said that cases of acquired virilism in which android hypertrichosis and defeminization were the foremost features of the clinical picture were rare. The literature of the subject distinguished three clinical types of acquired virilism—Cushing's syndrome, adreno-genitalism and ovarian virilism. There was, however, a good deal of variation and overlapping in the clinical findings, no doubt because pluriglandular phenomena occurred even when the specific effects of a single gland predominated. The three cases to be reported each presented an example of a different one of the three syndromes. All the patients had beards—two luxuriant, the third not nearly so pronounced; but in other respects they showed no great resemblance to one another. The first patient suffered from Cushing's syndrome, the outstanding features of which were android hypertrichosis, amenorrhœa, puffiness of the face, obesity of the torso, vascular hypertension and glycosuria. However, the patient's condition was slightly atypical, since she was normotensive and did not suffer from glycosuria. Discussing the ætiology of Cushing's syndrome, Dr. Fowler said that recent work with cortisone and adrenocorticotrophin in rheumatoid arthritis had suggested a relationship of the anterior lobe of the pituitary and the adrenal cortex in the respective roles of "initiator" and "effector". The patient had been thoroughly investigated and treated by X rays, with some relief; but the symptoms recurred. The second case was one of adreno-genitalism, one of several syndromes associated with hyperfunction of the adrenal cortex. The syndrome was characterized by android hypertrichosis, masculine musculature and a deep voice, together with amenorrhœa and anomalous genitalia. The patient was treated by removal of a large corticoadrenal tumour, and in spite of precautions she appeared to be in danger of death from acute adrenal insufficiency; but the administration of thiouracil towards the end of the second day after operation produced a remarkable improvement. The patient made a satisfactory recovery and later married. The third case was one of ovarian virilism, a syndrome of defeminization, the onset of virile changes being later and less pronounced than in the two other syndromes. The cause was diminished œstrogenation due to an arrhenoblastoma in one or other ovary. The patient had been treated by operation, the masculine features retrogressed, and the patient bore a son three years after the removal of the tumour. With regard to the case of adreno-genitalism, Dr. Fowler drew particular attention to the importance of thiouracil in the treatment of the so-called post-operative adrenal insufficiency. He pointed out that insufficiency of that kind might consist, in part at least, of acute thyreotoxicosis caused by the unbalanced action of excess thyroxine elaborated to compensate for the chronic over-activity of the adreno-cortical hormones.

DR. R. S. ELLERY (Melbourne) said that the history of the bearded woman, as a medical curiosity, had commenced with Hippocrates, who referred to a woman who grew a beard at the menopause; and that hirsute anomaly still piqued the curiosity of the crowd, challenged the ingenuity of the gynæcologist, and might set a problem for the psychiatrist. Whether in sideshow or clinic, the bearded woman was never without interest, and so great had that interest been in the past that certain hairy females had lent their names to immortality in the annals of medical anomaly. Barbara Urster, who flourished in the sixteenth century, possessed a beard reaching to her waist. Julia Pastrana and Rosine-Marguerite Müller, who died in a Dresden hospital in the eighteenth century, had profuse beards and full moustaches. John Evelyn, the diarist, reported seeing a hairy woman in a sideshow who had a most prolix beard and moustachios, and who was married and had a child who was not hairy. A bearded virgin had also been reported. In fact, the whole literature of medical curiosity was dotted with accounts of those freakish women. But why, one might ask, that perennial interest in the bearded woman? Apart from the curiosity which any anomaly might arouse, there was the fact that hair was a sexual symbol. In man it was a token of strength and wisdom, an emblem of virility. It established the patriarch. He that had a beard was more than a youth, and he that had no beard was less than a man. The man with a generous pilous development had always been regarded as possessing great sexual vigour. And as far as that proclivity went, it applied in the popular imagination to women. Hairy women were thought to be more libidinous. Nor was this an old wive's tale, but the considered dictum of gynæcologists and those who had been at pains to study the subject. The male beard, in addition to symbolizing virility, had also a sacred aspect. Men swore by their beards, just as in early days an oath was taken by placing the hand on the thigh of another. The sanctity of the oath was thus emphasized by contact with the most sacred parts, or at least through the mention of those parts or that which symbolized them, namely, the beard. Man was insulted if anyone pulled his beard. And when Sir Francis Drake impudently claimed in a naval clash to have "singed the King of Spain's beard", he implied that he had emasculated the hated enemy.

Dr. Ellery went on to say that the beard of man, therefore, was his own special emblem of virility, and in so far as it symbolized his sexuality it possessed a sanctity beyond the other facial appendages. When woman sprouted a beard, she usurped a fundamental function of her lord and master. She became a self-confessed virilist—one who, in bygone belief, might have compounded with the Devil to deceive mankind, a witch or a sorceress who could charm the innocent and weave spells to the detriment of God-fearing persons. In the eyes of the common people the bearded woman became a witch, to be abhorred and shunned by the ignorant populace, for when she appeared little children screamed, men drew their swords and women told their beads. Ostracism often drove her to solitude, and solitude often undermined the foundation of her sanity, and so her behaviour became one with that of the weird sisters who haunted the heath on moonless nights, and stirred in the cauldron of their black art sprigs of superstition and articles long sacred to the Prince of Darkness. That was perhaps why excessive facial hair was anathema to the modern woman. It lent her a mask of iniquity. It put the shame of sex upon her cheek. That which she would hide under the cloak of modesty became emblazoned upon her face for all to see. And the sight of that hairy visage, that androgynous apparition, called up those archaic memories and childish beliefs associated with witchcraft and satanism which everyone carried in the darker folds of the unconscious. The further humanity passed away from the days of demonology, the less would that mask of virilism summon up the repugnance of the witch, and the more would the emphasis be placed in the purely æsthetic sphere; and the greater the understanding of endocrinology, the less would womenfolk be haunted with the dread of a bearded countenance.

Dr. Ellery then said that though the full-bearded woman was not common in clinical experience, as physicians they often found women with varying degrees of facial hypertrichosis, and the mental hospital population provided them as psychiatrists with many hirsute anomalies. He did not need to mention the tufted growths which appeared on the faces of the senile and presenile female psychotics, nor to emphasize the post-climacteric and involutional melancholics whose distraught features were often disfigured with superabundant facial hair. The schizophrenic, often displaying a dysplastic habitus, also showed anomalous disposition of hair. That was now known to be due to endocrine dysfunction, which might have an ætiological

connexion with the disease itself. Research was at present proceeding along endocrine lines, and the urinary output of androgen, œstrogen, and 17-ketosteroids had been found to yield erratic amounts in affected women in contrast to normal controls, showing in the case of female schizophrenics a swing towards masculinity. Enough had been said to indicate that facial hypertrichosis was associated with hormonal imbalance, an abnormality in the psychosexual field in which the patient, whether psychotic or merely eccentric, seldom achieved full libidinal growth. The linking of the bearded woman with the schizophrenic by endocrine research and at the same time the establishment on a scientific basis of the philosophic conception of the hair as a sexual symbol, completed a circumferential survey of an interesting psychosomatic problem.

Dr. Ellery said that it remained merely to add that from the psychiatric angle the subject of the bearded woman had been barely scratched on the surface. Someone with psychoanalytic ingenuity would have to explain the bearded woman as a sexual fetish. For it was on record that a certain man, having married a bearded woman, would not rest when she died until he found another full-bearded wench, whom he then married with both gratitude and glee.

DR. J. W. JOHNSTONE (Melbourne) said that having had occasion recently to look up all the records of Cæsarean section at the Women's Hospital, Melbourne, over the last thirty years, he had found that both the first lower segment operation and the first extraperitoneal operation had been performed by Dr. Fowler in 1922. In Brisbane twenty-eight years later it was a privilege and pleasure, after his long gynæcological association with the Alfred Hospital, to hear Dr. Fowler speak on that rather new problem which had created unusual interest—the problem of the bearded woman. Dr. Fowler had applied himself to it with characteristic virility. The condition in its minor form was commonly met with by the general practitioner, and in its severer forms it was of interest to the physician and psychiatrist, to the surgeon, and especially to the gynæcologist.

Turning to physiological principles, Dr. Johnstone said it was evident that human beings were not specifically and exclusively 100% either male or female; they were divarications to a variable degree from a neutral eunuchoid stem. They were a composite blend of the sex sterols and each carried more than a pinch of the other brew. The gonad itself was potentially bisexual and had possibilities of development from either the cortex or the medulla, the genital tubular structures were bilaterally represented—Wolffian and Müllerian, one developed and the other remained rudimentary—and the secondary sex characteristics which were impressed on the soma by the sex sterols from the gonad, had some overlapping features in common. The pubic and axillary hair was ambisexual, but the excessive hair of male type on face, chest, and limbs was a characteristic imparted by the male sex sterol. It would seem likely that sex was created by genetic factors at the moment of fertilization and in equal numbers. That genetically determined sex, or tendency towards maleness or femaleness, was not, however, irrevocable. Goldsmidt had pointed out that as a result of different valencies of genetic balance or combinations of genes, the sex might cross over at variable times, either before the gonad itself was differentiated or later, after the specific secondary hormones had been elaborated in their various blends. As a general rule, the later in time the crossing-over occurred after the gonad was formed, the less obvious were the clinical aberrations. Most of the cases encountered in practice were relatively late crossings-over.

Dr. Johnstone went on to say that although the sexes should be determined genetically in equal numbers, in fact more fœtuses took the line of male development. At birth there was still a preponderance of perhaps 104 males to 100 females. Studies of the products of conception after abortion showed a much higher preponderance of male fœtuses. That might suggest that they were aberrations from the normal, and that Nature, by the processes of spontaneous abortion, attempted to rid herself of a defective gestation. Dr. Johnstone's experience was that there were many males in the population who were genetically determined females. The tendency to cross over to the male seemed to be dominant. While superfluous hirsutism was one of the symptoms of virilism, Dr. Johnstone put in a plea for the recognition, firstly, of what might be called simple hirsutism. That could result from personal, racial, genetic or unknown factors, or might be the early beginnings of some of the more severe states. Unless it was accompanied by other features, such as interference with the function of the gonad, complicated investigations not only depleted the patient's purse but made her introspective. It was by far the most common condition met with. There was no effective treatment except reassurance and cosmetic removal. Hormones were of little value; they did not neutralize one another like acids and alkalis. It was possible that a time might come when removal of one suprarenal would be as effective as thyreoidectomy had been. Even after all investigations, in the majority of cases the condition remained idiopathic.

Dealing with gross hirsutism and that accompanied by other features, particularly metabolic upsets and aberrant sexual development, Dr. Johnstone said that the problem was different and had been aptly illustrated by Dr. Fowler's series of cases. If a few very rare causes such as the pineal gland and thymus were excluded, it became a problem in diagnosis to place the lesion in one of three sites from above down—the pituitary, adrenal or ovary. The cases in which the pituitary was at fault were the least defined, but conformed somewhat to Cushing's syndrome. The term "Cushing's disease" should rightly be applied only to those cases as originally described, in which a demonstrable basophile adenoma was present, producing expansion changes, headache and nerve pressure. However, the syndrome was common with no tumour, with a microscopic tumour, or even with a suprapituitary lesion. Secondary adrenal changes were common, and the syndrome could arise solely from the suprarenal. In those cases hirsutism was the only real feature of virilism; they were in fact usually the reverse. The patients showed "buffalo" obesity and were asthenic with amenorrhœa and genital atrophy. Some hypertrophy of the clitoris in Dr. Fowler's cases suggested a suprarenal element. The other features were as Dr. Fowler had described them—purple striæ, polycythæmia, hypertension, and a tendency to glycosuria. The adrenogenital syndrome had been well illustrated by the second case. In it there was pronounced virilism, with sexual and somatic changes directed towards the male. That case showed what could be done by surgical excision of a circumscribed tumour. Dr. Johnstone said that Dr. Fowler was fortunate in having been able to complete his series by the rather rare arrhenoblastoma. Dr. Johnstone thought that another tumour had been reported also by Dr. W. K. McIntyre, of Launceston. It was of particular interest to gynæcologists and the prognosis was good. It produced defeminization followed by virilism, but not so marked as the usual adreno-genital syndrome. In most of the recorded cases the patients were obese.

Dr. Johnstone then mentioned some diagnostic points which he considered important. The first was consideration of the clinical features. The abrupt development of the symptoms often suggested their pathological nature. An X-ray examination of the *sella turcica* and suprarenal area was necessary; calcification was sometimes seen. A tumour might be palpable in the loin or pelvis. The use of an anæsthetic in the second case to allow the tumour to be palpated was to be commended; it was of even more interest to the gynæcologist, because in the ovary the tumour could be small, as in that case, and palpation difficult in the fat subject. A fourth important point was downward displacement of the kidney or deformation shown on a pyelogram. Aerography of the perirenal space should be carried out. An estimation of the 17-ketosteroids in the urine should be made. There seemed to be no agreement on a standard method, and there were wide variations. To be of significance the amount excreted had to be elevated to several times the normal figure. The excretion of 17-ketosteroids did not always mirror the

degree of activity of the gland, nor did it always coincide with the degree of virilism. Not all androgens were excreted as 17-ketosteroids and not all 17-ketosteroids were androgens. In general, the adreno-genital syndrome was associated with elevation of the amount excreted — in malignant tumours to astronomical degrees; in arrhenoblastoma there was some elevation, and in Cushing's syndrome there was little alteration. The limits for normal females overlapped those for males. Dr. Johnstone went on to say that surgical exploration was justified in the well-defined cases. The ovaries could be palpated through an anterior incision, it being remembered that the tumour could be as small as a walnut, and the suprarenals estimated. That could be difficult. The best type of incision to remove a suprarenal was for the surgeons to decide. With regard to post-operative reaction, the observation of Dr. Fowler and Dr. Davis that it could be due to a hyperthyreoid crisis was well worth further investigation.

Dr. Johnstone finally said that the association with mental disorders such as schizophrenia and epilepsy was well known, and favourable reports after operation on the suprarenal had been recorded. As a general rule he was of the opinion that the *libido* was increased in virilism, not decreased. That was in keeping with the therapeutic effect of the androgens, which produced eroticism in the female when pushed to the degree of producing hirsutism, although that could not usually be induced with œstrogens. It was an interesting point that tumours of the male suprarenal cortex were rare, and, during the mature period, produced feminism.

DR. W. K. MCINTYRE (Launceston, Tasmania) quoted his original case in 1944; that patient had recently given birth to a normal baby. He had added two more cases during the past two years; one patient had a typical clinical history and the other had a history of familial hirsutism.

DR. J. BORNSTEIN (Melbourne) quoted recent work at the Baker Medical Research Institute, Melbourne, on the assay of pituitary corticotrophic substance in the plasma, showing the value of such investigations and the high figures found in the plasma in the cases under discussion.

DR. GEORGE ELLIS (Charters Towers, Queensland) discussed a patient who had presented a behaviour problem. She showed no evidence of insulin resistance during full coma insulin treatment, and the ketosteroid excretion was normal. Her virilism had increased.

THE SECTION OF OTO-RHINO-LARYNGOLOGY AND THE SECTION OF RADIOLOGY AND RADIOTHERAPY.

Carcinoma of the Larynx.

A MEETING of the Section of Oto-Rhino-Laryngology and the Section of Radiology and Radiotherapy was held to discuss carcinoma of the larynx.

DR. ATHOL QUAYLE (Brisbane) discussed carcinoma of the larynx on the basis of 43 cases occurring in his practice in Brisbane. He emphasized his belief that of the 43 patients only 12 were regarded as having a reasonable prospect of being alive and free of the growth at the end of a period of five years from the time of their first examination. Of the growths, approximately half were so advanced at the first examination that the patients' condition was practically hopeless. It was not easy to find the reason for that state of affairs; distance from the city did not appear to be an important factor. Some of the patients had no doubt already consulted other doctors and been given a wrong diagnosis. The length of the history was not always informative. The extrinsic type of growth frequently reached a considerable size before producing symptoms to which the patient attached any significance; several patients with that type of lesion dated their symptoms from a "cold", to which they attributed its origin. Dr. Quayle wondered how the results could be improved. In the early cases the results were already reasonably good, in the intrinsic type of growth at any rate, whatever the method of treatment used. In the moderately advanced cases of intrinsic cancer the tendency now was to favour distance irradiation. Advanced intrinsic carcinoma was better treated by surgery. The extrinsic type was rather a different matter. The summit of surgical skill in dealing with such growths had probably been reached by Trotter and Colledge, and it seemed likely that no great advance in surgical technique would be developed, though the use of chemotherapy and antibiotics would save some patients who would otherwise die from infection. More efficient radiation therapy might be developed. Every person treating these patients had to learn by experience, and in his earlier cases the price had to be paid by both patient and surgeon. The best results could be obtained only when care, judgement and a frank appraisal of his own capacity had been developed by the operator. Unless some chemical or biochemical cure could be found, it seemed that the greatest improvement in results would be obtained by examination of the patients in an earlier stage of the disease. That could be achieved only by education of medical students and by post-graduate teaching. It could not be too strongly emphasized that every abnormal sensation in the throat, particularly if it remained localized to the same position and if it was more noticeable on swallowing, and any degree of hoarseness in an adult persisting for more than four weeks should be regarded as due to carcinoma until the whole of the larynx and hypopharynx had been examined with the aid of either a laryngeal mirror or a direct laryngoscope. Education of the public was not easy; but people could be encouraged to seek medical advice much earlier without the fear that a race of cancerophobes would develop.

DR. C. F. A. DE MONCHAUX (Sydney) read a paper entitled "Radiotherapy, and a New Classification in Carcinoma of the Larynx". He said that for the purposes of his paper radiotherapy included X-ray therapy and radium therapy. The vast majority of malignant laryngeal tumours, which fortunately were not common, were epidermoid carcinomata. The tumours varied widely in cellularity and in degree of malignancy, and therefore in their response to irradiation. In general, the more differentiated or adult the tumour, the more suitable for surgical treatment; the less differentiated or anaplastic, the more suitable for radiotherapy. Other important factors were (i) the stage and extent of the neoplastic process, and (ii) the site of origin of the tumour, whether internal, marginal or external. Dr. de Monchaux said that the sites of origin of laryngeal carcinomata were also the logical basis of their classification, and he suggested an amended classification. The existing classification into (i) intrinsic and (ii) extrinsic was really a surgical classification evolved years previously to suit the surgical viewpoint. Dr. de Monchaux proposed the use of a modification of the classification suggested by M. Lederman in 1943, a classification designed to furnish radiotherapists with a common basis for the analysis of cases and for the statistical assessment and evaluation of results of treatment by different methods and at different centres. Dr. de Monchaux had also drawn upon an earlier classification by Stanford Cade, which in his opinion had some better features than Lederman's. In the proposed new classification he suggested two main categories: (i) laryngeal, properly so called, and (ii) laryngo-pharyngeal or hypopharyngeal. The laryngeal group was then subdivided into (*a*) endolaryngeal or internal laryngeal growths and (*b*) epilaryngeal or marginal laryngeal growths. The laryngo-pharyngeal or hypopharyngeal group was subdivided into (*c*) ectolaryngeal or external laryngeal growths and (*d*) hypopharyngeal growths, properly so called. Dr. de Monchaux then discussed the subgroups in detail and pointed out how all laryngeal carcinomata were included in categories (*a*), (*b*) and (*c*), while category (*d*) covered purely pharyngeal growths. Thus in carcinoma of the larynx there were three distinct groups of tumours—endolaryngeal, epilaryngeal and ectolaryngeal. The proposed classification bore a logical relationship not only to the anatomical site of origin, but also to four important

considerations: (i) type of growth and degree of malignancy; (ii) main clinical features and prognosis; (iii) therapeutic response (including relative operability or response to surgery, and relative radiosensitivity or response to radiotherapy); (iv) specific indications for treatment by surgery, radiotherapy or both. Since the malignancy of laryngeal tumours was a function of their relative cellularity or degree of differentiation, the suggested classification was a good index of the relative malignancy of the growths. The endolaryngeal tumours were usually the most adult and least malignant, the ectolaryngeal tumours were usually the least differentiated and most malignant. Dr. de Monchaux then discussed the clinical features and symptoms of laryngeal carcinoma, and showed how the proposed classification was some index to the clinical features as well as to the prognosis. Referring to the response to treatment, Dr. de Monchaux indicated how the new classification afforded a good working index to the appropriate method of treating the tumours. In general, operability decreased as one passed from the endolaryngeal through the epilaryngeal to the ectolaryngeal tumours, and conversely radiosensitivity increased as one passed from the endolaryngeal to the ectolaryngeal group. Thus a greater number of growths inside the cavity of the larynx was suitable for surgical treatment than of those outside the larynx; on the other hand, marginal and external laryngeal tumours were more suitable for irradiation than for surgical treatment. The epilaryngeal group again occupied an intermediate position. Dr. de Monchaux then discussed in detail the treatment of laryngeal carcinomata in the light of his proposed classification and of the basic considerations of relative operability and radiosensitivity. In conclusion he said that if preliminary radiation therapy was given as a routine measure in all cases in which some form of laryngectomy was contemplated, then often the need for such a radical and mutilating surgical procedure might be completely obviated. Radiotherapy in some form or another should suffice for all advanced laryngeal carcinomata, whether endolaryngeal, epilaryngeal or ectolaryngeal in origin. In his opinion, at the present stage of knowledge and experience, radiotherapy was of greater importance than surgery in the control and management of laryngeal carcinoma.

DR. L. JOHNSTON (Melbourne), in opening the discussion, said that they were all agreed on the importance of early diagnosis in cancer, and he thought that it was rare at the present time for a general practitioner to delay for long the laryngeal investigation of a patient suffering from hoarseness. In his experience general practitioners tended to be over-cautious. Dr. Johnston said that many patients, young and old, were referred to him who had functional aphonia or simple laryngitis. It seemed to him that the general practitioner was now taking no chances of missing either a cancerous or a tuberculous larynx. Undue delay in the performance of a laryngeal examination was usually the fault of the patient. That was a pity, because the diagnosis was generally easy. Extrinsic and vocal cord carcinomata were as a rule easily seen in the laryngeal mirror, and more often than not they produced symptoms early. The lesion that was hard to diagnose early was the subglottic carcinoma, which could sometimes be silent for a long time and which was sometimes invisible in the laryngeal mirror until it had reached a considerable size. Dr. Johnston went on to say that recently he had examined two patients with subglottic carcinoma in whom both vocal cords were fixed, and in neither case had the growth involved the edge or upper surface of the true cords. Neither of the patients had sought help until the laryngeal obstruction was sufficient to require tracheotomy. One of the patients was alive after a laryngectomy performed six weeks prior to the meeting, and the other had not yet made up his mind about undergoing laryngectomy.

Referring to treatment, Dr. Johnston said that he had been interested to hear Dr. Quayle's opinion that in the treatment of intrinsic carcinoma the results of surgery and of irradiation were equally good. Dr. Johnston had not used irradiation much for intrinsic carcinoma. He regarded surgical treatment as more likely to produce a cure, and he now submitted to the operation of either laryngofissure or laryngectomy all patients suffering from intrinsic laryngeal carcinoma. However, he hoped to hear in the discussion the experience of those who had used irradiation in the treatment of intrinsic laryngeal carcinoma. Dr. Johnston said that in his experience extrinsic laryngeal carcinoma was rarely cured. All his patients during the past twelve years had been referred for radiation therapy, but so far none of them had been cured. He had it in mind to submit his next patient suffering from carcinoma of the pyriform fossa to radical surgical treatment, hoping that chemotherapy and the antibiotics would lessen the mortality rate of such operations. Dr. Johnston again hoped to hear the experience of those present, and he asked Dr. Quayle to say whether among his twelve cases there were any of extrinsic growths. He thought that if radiation therapy was effective it would be far more desirable than mutilating surgical treatment for extrinsic lesions, and he hoped to hear an account of results that would encourage him to carry on with radiation therapy for those lesions. Dr. Johnston said that in his opinion the term "extrinsic laryngeal carcinoma" should be dropped. Such epitheliomata in the pyriform fossa, the arytenoid area *et cetera* were all in the pharynx and they behaved like pharyngeal carcinomata. They spread rapidly and had not the good prognosis of the slowly growing true laryngeal carcinomata. There seemed no justification for describing such pharyngeal lesions as "extrinsic laryngeal".

DR. S. SUGGIT (Brisbane) thought that the majority of laryngeal cancers followed the course which one expected after the preliminary investigation had been carried out. However, there were some cancers which did not—notably the cancer which was initially thought to be early, but nevertheless always seemed to be one jump ahead of the laryngologist. On the other hand, there was the cancer which initially gave the appearance of being well advanced, but which nevertheless remained relatively stationary. Either of those types made the prognosis and the choice of treatment difficult. Dr. Suggit thought that all operations on the hypopharynx should not be regarded as hopeless until they had been properly tried. He joined issue with Dr. de Monchaux about the mutilating effects of radical surgery.

DR. W. CROSSE (Brisbane) said that it had been his practice to perform the window operation with radium implantation in all cases of early intrinsic carcinoma, especially when the middle third of the cord was involved. The results from that procedure at the Brisbane General Hospital were excellent. However, he was doubtful about the cases in which extension to either commissure had occurred. Dr. Crosse himself was opposed to excessively radical surgical procedures, and was in favour of Dr. de Monchaux's recommendation of radiation therapy in the more advanced cases. Dr. Crosse had not had much personal experience with laryngectomy. Of two of his patients one had died and the other survived and was apparently happy.

DR. E. FRECKER (Sydney) said that he had not had extensive experience with laryngeal cancer, his total number of cases being not more than a few dozen. He had found it possible to cure some patients with hypolaryngeal growths, but he stressed the fact that large doses must be used. With growths in the pyriform fossa he had had no luck whatsoever. Growths at the base of the tongue and on the epiglottis had yielded good results, because most of them were fairly radiosensitive. He had been disappointed with the results of his treatment of endolaryngeal growths. After the course of irradiation it was difficult to determine whether the growth was active or not. Post-irradiation changes also clouded the histological picture. If one was in doubt, a second course of X-ray therapy could be given, but it was never quite so effective as the first.

Dr. Frecker described a modification which Dr. Braddon, of Sydney, had introduced in his method of radium implantation. By the use of a ring through the ordinary window approach the dose could be more accurately calculated, and if there were any extensions to the other side or under the glottis, they too could be irradiated by a second

smaller ring. Dr. Braddon had found a more even distribution of dosage throughout the field by using the ring rather than the pallisade of needles. His results had been most promising. Referring to the subglottic growths and the difficulty of localizing them by the use of a mirror or by the endoscopic method, Dr. Frecker said that he had found that a soft tissue film of the neck was often helpful in revealing the growth. It was of great help to the radiotherapist if the surgeon could give exact information about the extent and site of the growth. As far as laryngectomy was concerned, Dr. Frecker said that he had seen several good results for as long as four years, and he believed that it was too much to say that the method was never beneficial. He knew of one doctor who had undergone the operation and who still retained good œsophageal speech. Dr. Frecker wondered what was the mechanism of that type of speech. The doctor who had had his larynx removed assured him that he did not swallow air to speak, and in fact that he did not know how he produced his voice.

DR. S. C. SEN (India) asked the speakers' experience of the Coutard technique.

DR. G. C. HALLIDAY (Sydney) said that one definite conclusion seemed to be that the growth whose treatment gave good results by all methods was the early localized lesion. In the United States of America that type of growth was frequently removed by diathermy by the endolaryngeal approach. Dr. Halliday had been interested in Dr. Frecker's observations, and said that in New York straight irradiation was often employed for early growths with good effects. Dr. Halliday disagreed with Dr. de Monchaux's statement that lymph-gland involvement was an indication for radiation therapy; he believed that surgical treatment was the only chance for patients suffering from that condition.

Dr. de Monchaux, in reply, agreed with the remarks about early diagnosis made by Dr. Johnston, and with those concerning tumour sensitivity made by Dr. Suggit. With reference to Dr. Frecker's treatment of early laryngeal carcinomata, Dr. de Monchaux said that he himself had not had much experience with it nor with the Coutard technique about which Dr. Sen had inquired. In reply to Dr. Halliday, Dr. de Monchaux said that he had found that the question of surgical treatment or radiation therapy for lymph gland involvement was always controversial. He himself still recommended irradiation. Later, if some hormonal or other remedy was discovered, it was perhaps not too much to expect that both surgery and irradiation would be discarded.

Dr. Quayle, in reply, said that so far as the extrinsic growths which had invaded the larynx were concerned, he thought that the fact of invasion did not alter the practical problem much, because one was still confronted with a patient whose larynx was involved. He thought that Dr. de Monchaux must have searched very carefully for Butlin and Chevalier Jackson's statements. With reference to the grading of tumours, Dr. Quayle said that he had found the results from the treatment by irradiation of grade IV tumours were disappointing. The initial response was good but was not maintained. In his opinion less emphasis should be placed on the pathological report, because the type of growth might vary in different parts of the tumour. Dr. Quayle preferred to rely on the appearance of the tumour to a large extent. Referring to the X-ray treatment of extensive hypopharyngeal growths, Dr. Quayle said that he agreed that the results of surgical treatment were not encouraging, but he did not know whether radiation therapy could produce any better. The best thing, in his experience, was to leave such growths alone. In reply to Dr. Johnston, who had asked about growths which had gone a little beyond the early stage, Dr. Quayle said that he had found that the majority opinion in Great Britain was that distance irradiation should be employed. Laryngectomy was unjustified in those cases. Also in reply to Dr. Johnston, Dr. Quayle said that in his series of patients in Brisbane there were none having a reasonable hope of cure in the "extrinsic" group.

THE SECTION OF OTO-RHINO-LARYNGOLOGY, THE SECTION OF NEUROLOGY AND PSYCHIATRY, AND THE SECTION OF OPHTHALMOLOGY.

Headache.

A MEETING of the Section of Oto-Rhino-Laryngology, the Section of Neurology and Psychiatry, and the Section of Ophthalmology was held to discuss headache.

PROFESSOR W. V. MACFARLANE (Brisbane) said that headache was a form of pain. It was a persistent aching pain and was distinct from the pricking or burning pains of peripheral nerves. Headache resulted from the stretching of unmyelinated endings in vessels or dura. Its origin might be extracranial or intracranial. Headache might be referred from the site of stimulus to other areas of the head through convergence of afferents from different areas on the same nuclear cells. Headache was probably perceived at the mid-brain (tectal), diencephalic or cortical levels. Available evidence rather favoured the thalamus as the most important region. The intensity of headache might be estimated quantitatively by comparison of its pain with that of a measured painful stimulus. Perception of pain was differentiated from reaction to pain. The latter, with its affective component, might be eliminated by removal of the precentral cortical zones.

DR. R. H. BETTINGTON (Sydney) began by giving a short history of headache from Hippocrates, who first mentioned headache, down to Morrell Mackenzie and Sluder, who, he said, might be regarded as the first of the modern oto-rhino-laryngologists. Dr. Bettington went on to discuss the character of the pain and the type of headache. He said that the pain was localized, was of a dull aching character, and was usually periodic and made worse by anything which tended to raise the local or general blood pressure. Wolff's measure of pain from "1+" to "10+" was quoted, and sinus barotrauma was mentioned. Dr. Bettington said that paranasal neuralgia was not regarded as true headache of nasal origin.

Dr. Bettington then mentioned experiments indicating the sources of the pain. He said that Proetz had classified the causes; he had stated that some headaches could not be accounted for, and frequently patients who had conditions which were recognized as causes of headaches did not complain of them. Wolff's experiments indicated that positive or negative pressure in the sinuses was a factor in the causation of headache, but that the lateral nasal walls, particularly the sinus openings, were far more sensitive to pain than the inside of the sinuses, and congestion of the mucosa over the turbinates was the most important factor. It was suggested that the action of a local anæsthetic in the immediate relief of pain was due more to the vasoconstricting action and a corresponding reflex in the cerebral vessels than to any actual anæsthetic effect. Occipital headache, hitherto thought to be a direct symptom of sphenoidal sinusitis, was shown to be a reflex effect from any chronic sinusitis.

Dr. Bettington briefly outlined the diagnosis and mentioned the different conditions associated with nasal headache. With regard to treatment, he laid stress on the need for the cause of the headache to be discovered before treatment could be satisfactory.

DR. W. LOCKHART GIBSON (Brisbane) discussed headache from the ophthalmologist's point of view. He divided the population into two types: (i) the non-headache type of people, who did not suffer from headache without some major lesion; (ii) the headache type, who consulted an ophthalmologist because of headaches. Dr. Gibson then enumerated the ophthalmological factors that might be involved. The presence of "eye strain" depended upon (i) the use to which the eyes were put, (ii) the capacity of the subject to withstand sustained effort, and (iii) the efficiency of the visual apparatus. During monotonous work the perceptive mechanism in the brain tired; a somewhat similar condition occurred after head injuries. Illumination was important; the correction of lighting might be the only remedy required. In the same way sun

glare might be the cause of headache, and spectacles of the lightest tint gave relief, or correction of refraction with spectacle lenses would minimize the effects of glare. Referring to the subject's capacity to withstand sustained effort, Dr. Gibson pointed out that a reduction might be temporary (following illness or overwork) or chronic, from various causes. The efficiency of the visual apparatus was important, and errors of refraction should be corrected; also muscle imbalance might be involved. Referring to children, Dr. Gibson said that they also could be divided into the two classes mentioned at the beginning of his paper. The non-headache type were the "happy-go-lucky" ones. The headache type were at the top, or near the top, of the class; if they were half-way down, there was a reason for it, such as allergy or illness. Being promoted and having missed a class was a frequent cause of headache. Only a small percentage of headaches in children were due to refractive errors. Dr. Gibson then spoke of alexia and mentioned the discovery by J. Lockhart Gibson in 1904 that an adult subject of alexia had a lesion in the left side of the brain, found *post mortem*. The reading centre was in the left side of the brain in a right-handed person; there was no definite proof that the converse was true. Dr. H. L. St. Vincent Welsh, of Sydney, had shown how to cure the condition by making a right-handed patient left-handed. Dr. Gibson pointed out that the patient would be saved much distress if the condition was cured quickly. He went on to say that when the ophthalmologist had decided that the visual apparatus was not involved in the headaches, he should still give the patient advice as to other possible causes. Some disease or toxic condition might be present. In a female patient headache might be associated with a phase in the menstrual cycle. Allergy, hypoglycæmia, inadequate food intake and anomalies of blood pressure might be at fault. The cause might be psychological. Finally, Dr. Gibson mentioned the case in which no abnormality of any kind could be detected, but the patient suffered from severe neuralgic headache, mostly on one side; the cause might be in the bite—one tooth might be striking another too hard, although no teeth were particularly tender. Suitable dental treatment would remedy the condition in a few minutes.

DR. JOHN BOSTOCK (Brisbane) discussed the "trap" headache, first making reference to his long-continued and unsuccessful attempts to find the causes of his own headaches. He had found that classification of headache by description was inherently impossible, owing to the basic principles involved. He mentioned the concepts of headache as due to eyestrain, toxic conditions and allergens, and said that success in therapy based on those concepts was largely psychological. He had reached the conclusion that hate and conflict were important ætiological factors in headache; sufferers were caught in the "trap" of destiny. Treatment by psychotherapy dealing with "trap" situations gave highly satisfactory results. Dr. Bostock then presented the following new definition of the term "migraine", which he believed should replace the old descriptions: "The commonest type of headache. It may be either bilateral or unilateral, circumscribed or diffuse, showing wide ranges of duration, chronicity and resistance to therapy. The outstanding ætiological factor is a conflict of ideas and emotions as occurs in a 'trap' situation from which the sufferer cannot escape. Resulting vascular changes in acute attacks intensify the feelings of pain and discomfort. Often the headache appears to have a familial tendency which may be due to either genetic influences producing increasing sensitivity and/or familial environmental influences." Dr. Bostock went on to say that headache was the registration in consciousness of changes in potential in the regulating mechanism which provided a neural energy constant. Consideration of that theory gave a satisfactory explanation of headache. Changes in that potential could be due to organic causes. That fact accounted for the identical nature of the headache in both organic and psychological types.

DR. RONALD LOWE (Melbourne) spoke from an ophthalmological point of view. He said that during the war, to judge by the number of consultation forms they received, ophthalmologists sometimes became known as headache doctors. There was still a tendency for large numbers of patients to be referred to ophthalmologists before adequate investigation had been carried out. Frequently that was a waste of the patient's money. Dr. Lowe thought that patients should not be referred straight away because in many cases the headache in a very short time could be distinguished as not being due to ophthalmological causes. Dr. Lowe agreed with Dr. Gibson about the two types of patient. The recent severe headache—the type of headache which the patient said had been present to a severe degree for three weeks without relief—was almost never due to a refractive error. Glaucoma and other eye conditions might cause a headache of that type, but it was certainly rare, and in any case there were usually other eye symptoms. A careful history was very important.

DR. A. S. ELLIS (Brisbane) found that there were many types of headache. He said that as a psychiatrist he examined people referred by their family doctor because of pains in the neck and across the forehead, which the patients called headaches. The patient's description shrieked the emotional origin of the pain. Dr. Ellis believed that they were on the wrong track when they looked inside the skull for a cause. In his opinion mental strain caused muscle tension, and that was the cause of the pain in the back of the neck and across the forehead. Those headaches could be relieved by psychotherapy.

DR. MICHAEL KELLY (Melbourne) was of the opinion that headaches should not be separated from pain in other parts of the body. As was well known, such pain could be either visceral or somatic. The visceral type could also cause referred pain. Within the skull there were the various sensitive structures, but from where was the pain referred? It was possible that the pain might be referred from elsewhere. In Penfield's work of stimulation of the cortex painful stimuli were felt only rarely; but, for that matter, touch was not felt either. Rather was it apprehended as an awareness of the stimulus. Most headaches of eye or nasal origin were associated with pain in the neck, and that represented the referred component of the visceral pain. There were also headaches due to muscular lesions in the back of the neck, and they were likely to be referred to the eye. Dramatic relief was sometimes produced by injection of local anæsthetic solutions.

DR. E. COUPER BLACK (Adelaide) said that he had come to the conclusion that refractive errors had nothing to do with headache. He himself was going to try to solve Professor Bostock's trap.

DR. A. J. M. SINCLAIR (Melbourne) referred to three patients who had been admitted to the Royal Melbourne Hospital with headache as their principal presenting symptom. All three had significant psychiatric symptoms. Two of them underwent careful investigation of the central nervous system. All three died with unrecognized brain tumours.

DR. R. H. VON DER BORCH (Adelaide) was of the opinion that the nose as a cause of headaches was very rare. He wondered whether Professor Bostock could tell him the respective figures for each of the causes of headache.

DR. G. C. HALLIDAY (Sydney) asked Dr. Bettington's opinion about excessive smoking as a cause of headache. During the war he had examined hundreds of patients referred for investigation of headache, many of whom showed evidence of excessive smoking. If told not to smoke, they did not come back.

Professor Macfarlane, in reply, referred to headache of nasal origin. He said that increased pressure could press on a blood vessel or decreased pressure could tug a blood vessel, and that probably constituted the stimulus for the production of pain. The eye, neck muscle and tension types of headache probably had some sort of biochemical background. Professor Macfarlane said that he could not make up his mind about the psychological types, but he did believe that underlying them there was some change in the blood vessels of the brain somewhere. An interesting point about those headaches was their theoretical distribu-

tion, in which there was a symmetry not to be found in organic conditions in other parts of the body. He thought that there were more subtle changes than those that could at present be studied through the open skull.

Dr. Bettington, in reply to Dr. Halliday, said that since the question came from a non-smoker to him as almost a non-smoker, it was perhaps loaded. However, he did agree that smoking was a factor, but there was also a large psychological factor as well. In his experience repatriation patients were often the modern counterpart of those examined during the war.

Professor Bostock, in reply to the question asked by Dr. von der Borch, said that unfortunately he could not give exact figures, but he did believe that a large percentage of headaches were of psychiatric origin.

THE SECTION OF NEUROLOGY AND PSYCHIATRY AND THE SECTION OF RADIOLOGY AND RADIOTHERAPY.

Cerebral Angiography.

A MEETING of the Section of Neurology and Psychiatry and the Section of Radiology and Radiotherapy was held to discuss cerebral angiography.

DR. J. B. CURTIS (Melbourne) briefly discussed cerebral angiography, which he said had been introduced by Moniz in 1927. Loman and Myerson in 1936 had introduced the percutaneous technique of puncturing the carotid artery, and Gross in 1940 had substituted the use of diodone for thorotrast. Diodone was a water-soluble iodine contrast substance, not radio-active, and readily excreted by the kidneys. The Scandinavian school, particularly Lindgren in Stockholm (1947) had perfected the modern technique by combining the percutaneous method with the use of diodone, and so had made the procedure easy, safe, and of value in diagnosis. The percutaneous method had become the routine at the Nuffield Department of Surgery, Oxford. After some practice, in which failures were many, a high proportion of success was obtained. For routine work three films were taken, in both antero-posterior and lateral projections, towards the end of the injection and two and six seconds later. At Oxford there had recently been developed (Curtis, 1949) an apparatus capable of taking up to 25 full-size X-ray films at intervals of half a second. By that means it was possible to study finer details of the physiology and pathology of the cerebral circulation and to be more accurate in the diagnosis of intracranial lesions.

Dr. Curtis then showed a number of slides and films to illustrate his paper. He said that the physiological information yielded by rapid serial angiography comprised (i) the cerebral circulation time, (ii) the order of venous filling, and (iii) the functioning of the circle of Willis. From the pathological point of view cerebral angiography might be expected to be 90% accurate in the localization of tumours of the cerebral hemispheres, and would give a correct pathological diagnosis in over 80%. Rapid serial angiography had revealed finer details in the differential diagnosis of abnormalities of circulation, and it certainly revealed some lesions which would otherwise have been missed. Cerebral angiography was indicated in the following circumstances: (i) in all cases of subarachnoid hæmorrhage and in suspected cases of intracranial aneurysm and vascular anomaly; (ii) in all suspected cases of vascular thrombosis; (iii) in cases of chronic subdural hæmatoma with a characteristic picture; (iv) in all suspected cases of tumour of the cerebral hemispheres.

DR. H. G. MARSH (Sydney) discussed cerebral angiography from the viewpoint of a diagnostic radiologist. He referred first to the history of its development and to possible future trends. The method commonly used at the present time was the exposure by mechanical means of a series of films in fairly rapid succession; several devices were available which made four to six exposures in as many seconds on separate cassettes. That was adequate for most purposes, and the method had become valuable without being too elaborate. For research work, and possibly for routine use in the future, machinery had been developed by adaptation of the aerial camera film magazine so that exposures might be made as often as four times per second, or the total time during which the opaque medium was followed could be extended to many seconds. Although it was still in the early experimental stage, the electronic image intensifier would open a whole new field of dynamic studies to the radiologist, and X-ray cinematography would probably be widely used. At the present time angiography could be carried out satisfactorily by means of standard X-ray machines and some form of simple cassette-changing device. A rotating target tube and a stationary or self-cocking Bucky grid were desirable. Two contrast media were now in use—thorotrast and diodone. Owing to its dangers and disadvantages thorotrast was usually reserved for special cases; amounts greater than a total of 30 millilitres might cause damage to the reticulo-endothelial system or give rise to newgrowths, and extravascular deposition of the substance might cause granulations or large areas of cicatrization. Diodone also had disadvantages, but the injection of two millilitres on the day before angiography might detect undue sensitivity. Diodone could be used repeatedly, as it was rapidly eliminated, and amounts up to 60 millilitres seemed to cause no trouble. Dr. Marsh then described in detail the technique of making an angiographic examination in use at Sydney Hospital. He pointed out that, as the method of investigation required decisions to be made immediately on wet films, it was essential for the radiologist to be prepared to give more than routine film reading service to a neurosurgical clinic. The decision to make an angiographic examination rested with the neurosurgeon. The information to be gained was of great value in two main classes of lesions: (i) vascular lesions of all kinds, and especially the various causes of spontaneous subarachnoid hæmorrhage; (ii) tumours and other space-occupying lesions. The method might be of use in certain cases in which the diagnosis rested between cerebral thrombosis and a tumour which had produced symptoms with unusual suddenness. In illustration of his remarks Dr. Marsh showed a number of slides and described the appearances found in them.

THE SECTION OF OBSTETRICS AND GYNÆCOLOGY AND THE SECTION OF PÆDIATRICS.

Infection in the Midwifery Nursery.

A MEETING of the Section of Obstetrics and Gynæcology and the Section of Pædiatrics was held to discuss infection in the midwifery nursery.

DR. KATE CAMPBELL (Melbourne) read a paper on nursery infections. She said that the problem had arisen as the result of the hospitalization of midwifery patients and was studied under four headings. The first had to do with modes of introduction of infection into the nursery. The possible sources were: (*a*) the mother, nurse, doctor, pathologist or any member of the nursery personnel with a frank lesion; (*b*) infection from the carrier state in the nose or mouth of any of these individuals; (*c*) the laundry; (*d*) artificial feedings or feeding utensils; (*e*) infected breast milk from the mother with mastitis or infected nipple.

Secondly to be considered were modes of transmission. These included the attendants' hands; communal baths and showers; communal change tables; bedding and blankets; baby carriers; dust; nursery equipment, such as scales and thermometers; communal hand towels, nail brushes, etc.; charts and writing materials if left on infected infants' cots; stethoscopes.

The means instituted to combat infection included: (*a*) control of nursery personnel and adequate staff; (*b*) provision of adequate nursery facilities, particularly hand basins; (*c*) maintenance of a satisfactory level of nursery hygiene and education of the nursery staff therein, particularly as to the bacterial content of infants' stools and the

need for washing the hands after changing an infant; (*d*) laundry control.

Next to be considered was the institution of measures when a case of infection had occurred. Prompt and adequate isolation was stressed and the need for setting up a clean nursery to receive infants born after the onset of the infection. This necessitated three separate nurseries with completely separate staffs: (*a*) the original potentially infected nursery, (*b*) the isolation nursery, and (*c*) the "clean" nursery. The isolation nursery should be a separate and self-contained unit.

Dr. Campbell then discussed the different types of nursery infections, namely, sepsis, gastro-intestinal infection, respiratory infection and monilial infections. She gave a brief outline of treatment and in conclusion mentioned the problem of unified nursery control in nurseries in private and community hospitals.

PROFESSOR G. SHEDDEN ADAM (Brisbane) read a paper on the obstetrical aspect of nursery infections. He began by emphasizing the indivisibility in that connexion of the work of obstetricians and pædiatricians, and then discussed the obstetrician's responsibility in the ante-partum and intra-partum care of the mother and infant and (when that applied) as administrator of a maternity hospital. Referring to ante-natal conditions, Professor Adam mentioned the connexion between a severely inadequate maternal diet and premature birth of the infant, and showed how prematurely born infants were more susceptible to infection than those born at term. Amongst the causes of a poor maternal diet might be unnecessarily severe or prolonged restriction imposed by the obstetrician in the treatment of toxæmias of pregnancy. The transient œdema shown by some babies born of toxæmic mothers, especialy if premature, might be related to their low serum protein level, probably acquired as a consequence of a similar condition in the mother. Since antibodies were said to be concentrated mainly in the gamma-globulin fraction of serum protein, the stage was set for a poor defensive reaction to neonatal infection. The work of Rountree and others had demonstrated a high nasal carrier rate of *Staphylococcus pyogenes* amongst infants; therefore the question of defensive mechanisms against further invasion was doubly important. The obstetrician should obviously ensure that the expectant mother was taking an adequate and well-balanced diet, especially in terms of protein. Referring to intra-partum infection, Professor Adam said that it was now known that under certain conditions the stage might be set for the early onset of primary pneumonia within forty-eight hours of birth; the conditions, though of varied origin, were all associated with fœtal anoxia (so-called fœtal distress). The *liquor amnii* would be involved—it might become infective from bacterial contamination as well as irritant from meconium. The prevention of that type of pneumonia was closely bound up with the obstetrical management of the case and with the early care of the infant, usually the obstetrician's responsibility at that stage. Good obstetric judgement and skill would help to reduce fœtal anoxia. The infant's airway should be kept free from mucus, meconium and contaminated liquor; the design and efficiency of aspirators for that purpose required improvement. The head-low position should be used unless there was reason to fear intracranial hæmorrhage. Mouth-to-mouth insufflation should be avoided. Penicillin or penicillin and streptomycin together should be given prophylactically for seventy-two hours if the inhalation of contaminated liquor was likely to have occurred. Professor Adam wondered whether the routine use of a 10% sodium sulphacetamide solution to prevent neonatal conjunctivitis was acceptable, since it was free from the disadvantages of silver nitrate. Referring to the umbilical stump, Professor Adam pointed out the danger of infection from that portal of entry, and stressed the need for rigid aseptic handling of the fœtal cut end of the cord. Although *tetanus neonatorum* had occurred in Queensland in 1948, investigation had shown that maternal stools were not a likely source of such infection. However, an unhealthy, moist, gangrenous umbilical stump four or five days after birth might easily provide fertile soil for the *Clostridium tetani*; the New Zealand experience of infected talc powder came to mind. Faultless nursery technique in the care of the umbilical cord was desirable. Professor Adam said that the obstetrician was in a less favourable position to prevent other forms of neonatal infections; but as the administrator of a maternity hospital he was directly concerned with appropriate measures of prevention. He must work in close liaison with his senior nursery sisters and with the visiting pædiatrician and make sure of his trainee staff. He must consider possible routes of introduction of infection and methods of spread, and devise suitable preventive measures. The key to success was cooperation, above all with the pædiatrician.

DR. STEPHEN WILLIAMS (Sydney) referred to gastro-intestinal infections. He presented the concept of the risk of infection in midwifery nurseries and pædiatric wards, and described the complex and obscure ætiology, which was correlated with the growing custom originating some fifteen years earlier of admission to hospital of the majority of women in child-birth. A new disease had arisen producing diarrhœa in new-born babies. Dr. Williams recalled with admiration Dr. Campbell's excellent published description of an outbreak which had practically decimated a midwifery nursery in Melbourne. Dr. Williams said that an organism of the coliform group which was constantly found in those outbreaks was strongly suspected as the causative agent; that theory was held in certain circles in England; at all events, the considerable amount of transmission of the organisms was a reflection on nursery hygiene. The conditions which Dr. Campbell had described and the difficulties encountered in Melbourne were equally applicable to the children's hospital wards and the midwifery nurseries with which he was acquainted.

Dr. Williams went on to say that the bacteriologist was usually given great responsibility for the setting up of the regulations to control outbreaks and prevent others, and also had to keep a constant check to be satisfied that the regulations were being observed. He had found that in the Royal Alexandra Hospital for Children, Sydney, the key to the problem was the education of charge nurses and sisters, through whom every member of the nursing and domestic staffs associated with the patients could be indoctrinated in the details; but constant consultations had to be maintained.

DR. FELIX ARDEN (Brisbane) thought that dust and human fingers were the principal means of transmission of infection to the babies, and he drew attention to the lethal effect of direct sunlight on most germs. At the Brisbane Women's Hospital the nurseries were arranged to give each baby as much exposure to sunlight as was possible. Under conditions existing in Queensland he considered that the benefits of masking the staff did not compensate the discomfort and loss of efficiency caused. Gloves were worn by nurses handling stools that could be contaminated. The value of eye drops was problematical, and he had been pleased to hear the condemnation of silver nitrate drops by others. Dr. Arden said that Dr. Campbell had been right to distinguish between what should be and what was; one was obliged to compromise on many occasions, and the direct prevention of infection by the use of antibiotics was thus all the more important. At the Brisbane Women's Hospital, it was customary to give penicillin and streptomycin prophylactically from birth to any baby suspected of harbouring pneumonia resulting from difficult labour or atelectasis; any symptoms whatever that could be due to infection were indications for vigorous treatment of the baby on the assumption that infection had occurred. Dr. Arden went on to say that gastro-enteritis was the biggest problem in Brisbane, and a bigger one than it was in cooler climates. For the control of the disease the "suspect nursery" represented a half-way house between the "clean nursery" and the gastro-enteritis ward and was essential. Dr. Arden thought that the figures used by Dr. Campbell to illustrate the prevalence of the infection were unduly gloomy by comparison with more recent standards; their origin was from Scotland and they applied to the pre-penicillin era. At the Brisbane Women's Hospital during the past two years there had been 4342 births in the public wards and only 80 deaths; two of the deaths

were wholly of an infective origin, and in six the origin was partially infective, the conditions present comprising prematurity, cleft palate, *icterus gravis* and terminal bronchopneumonia. Deaths from gastro-enteritis would not be included in the figures, as the babies were transferred to the Brisbane Children's Hospital, though he could not remember that any of the babies so transferred had died. Dr. Arden, in conclusion, said that if those figures were reasonably good, that fact was attributable to the other fact that their nursery technique was strictly "Kate Campbell".

MISS P. M. ROUNTREE (Sydney) spoke of the bacteriology of staphylococcal infections, which were ubiquitous in the hospital environment. She said that 50% or more of the staff were nasal carriers, but the proportion that contaminated the environment was unknown; 20% of contacts were skin carriers; 90% of the babies were nasal carriers by the second week of life, though most of them were none the worse for it. Miss Rountree wondered why some showed clinical lesions. Studies in England, Denmark and Sweden had been made in epidemics of neonatal pemphigus, and one type of staphylococcus was incriminated, though mixed types were recovered from eyes and noses. There might be only a few pathogenic strains capable of causing epidemics of pemphigus and perhaps those strains were present in children and adults in the community. To supply the necessary information many epidemic strains would have to be examined and Miss Rountree was anxious to receive them for close typing from any available source. They should be sent to her at the Fairfax Institute of Pathology, at the Royal Prince Alfred Hospital, Sydney. Miss Rountree then discussed the problem of the treatment of the infections, and said that penicillin-resistance and latterly streptomycin-resistance were serious complications; 30% of the strains examined were resistant both to penicillin and to streptomycin. The day was fast approaching when the use of those antibiotics would have to be discontinued and aureomycin used instead; it might be advisable to treat all neonatal infectious conditions with one of the newer antibiotics.

DR. I. M. MACKERRAS (Brisbane) said that Dr. Williams had hit the nail on the head; the problem was a new one, and they were all in the teething stage but were making progress; epidemics were already less frequent, and results such as those reported by Professor Shedden Adam were certainly not attributable to luck. Speaking of neonatal tetanus, Dr. Mackerras said that in one series the tetanus bacilli were isolated from the pads and traced to the dust in the ward. That had produced considerable activity over steam sterilizers—"pie warmers"—and some autoclaves which had been shown to be grossly inadequate. With reference to intestinal infections, Dr. Mackerras said that the carrier problem was a salient point, as there were many possible links among members of the nursing staff and mothers. The only certain link was from a mother to her infant to the neonatal nursery. The organism might be present in the infant at birth; that was undoubtedly true for certain organisms of the Salmonella group and perhaps for some of the members of the Shigella and dysentery groups such as the Flexner bacilli, though in those circumstances the organisms were not pathogenic to the host but were pathogenic to others.

Dr. Mackerras went on to say that the preventive measures to be adopted were complicated, and referred to a report recently received from the United States of America which had been compiled by Dr. Clifford's committee. The standards and recommendations set out in that report confirmed the complicated nature of the difficult and tedious preventive programme required. As with all drills, the procedure became easier with increasing expertness; it took a few years to make a good soldier. Dr. Mackerras said that Dr. E. H. Derrick, who was visiting America, had sent him recently pamphlets illustrating the little "Isolette", a baby bed which was enclosed but had openings in the sides through which the arms could be inserted; the mechanism was after the style of an iris diaphragm. The cost was a mere 600 dollars per bed, though that was really insignificant if the death rate could be reduced by its use. It was certainly much more flexible and less expensive than an additional suspect isolation ward; the odd suspect could be popped into an "Isolette" and looked after in it with safety to the other babies. Dr. Mackerras, in conclusion, gave a warning against reliance on sulphonamides in the prophylaxis of intestinal infection, but was confident that the position of very young babies was coming under control. The problem was still important and required much basic scientific research.

DR. VERNON COLLINS (Melbourne) referred to the immense amount of detail necessary to prevent cross-infection in babies, as had been emphasized by Dr. Campbell. The number of hands and noses and throats among the contacts was of the utmost importance, and the hands especially provided an almost insuperable problem because of the intolerable amount of hand-washing that was essential. Dr. Collins suggested that it was preferable to plan for the care of the whole patient by an individual nurse instead of attempting to provide nurses to carry out each of the functions. They should also give serious consideration to the "rooming in" arrangement and thus try to return to the beginning of the century, when the mothers usually were confined in their homes and other babies were not exposed to the risk of infection. His conception of what was required envisaged the construction of wards divided across the centre, accommodation being provided on each side of the partition for one mother and her baby. Dr. Collins went on to say that there were many other problems for the organizer of the routine. If the mother had her baby with her throughout the day and night and was disturbed in the night, she should not be awakened at 5 a.m. to drink a cup of tea; compensations of that description could be multiplied to make the system satisfactory. He thought that they should consider the adoption of the "rooming in" principle on the grand scale to meet the demand that was bound to grow rapidly as more and more people, including the wives of doctors, realized the advantages and the relative comfort of the system.

DR. G. M. REID (Brisbane) asked whether he could be supplied with information concerning the use of beeswax oil on blankets and of floor-waxing to control dust and airborne infections.

DR. E. FREE (Brisbane) reported to the meeting that that morning a seventh example had appeared in a Brisbane nursery of what they were calling "the lilac babies"; the babies, though sleeping and eating well and in other respects in good health, had on the eighth day become lilac-coloured from head to toe. Dr. Free did not think that the condition was infectious, as their investigations indicated that they were dealing with an extraordinary manifestation of the absorption by the babies of an aniline dye which was contained in the ink used to mark the diapers for identification purposes.

DR. L. P. SAPSFORD (Brisbane) asked whether a baby could be infected from mastitis of the mother; he wanted information as to the type of organism if it was transmitted.

DR. J. BRODY (Gordonvale, Queensland) said that he had noted the "rooming in" practice when in the United States of America, and thought that it was regarded as an improvement. He had implemented the idea in his own practice in North Queensland, and had the backing of the mothers but resistance from the nursing staff; the nurses were convinced that mothers were quite incapable of dealing with their babies and obstructive to the nurses in the carrying out of their duties. It was essential to obtain the intelligent cooperation of the nursing staff after careful tuition and explanation of the rationale of the plan. The mother-baby relationship, which was important psychologically, was materially improved by the system, and the young mother was able to obtain valuable guidance which helped her on her return to her home.

DR. L. P. WAIT (Melbourne) inquired whether it was not the case that babies were washed too often and too vigorously.

Dr. Southby, from the chair, referred to the state of anoxia associated with toxæmia which necessitated close attention to the baby of a toxæmic mother especially during the first week. He described how he had seen nine babies packed on a baby carrier literally like sardines in a tin; the carrier was ironically called the "Spirit of Progress". He had caused a census to be taken in three of the Melbourne maternity hospital nurseries covering a twelve-hour period from 8 a.m. to 8 p.m., to establish how many entries had been made by persons recorded under the headings of nurses, doctors, mothers and members of the domestic staff. In one nursery containing 40 babies, the figures were 227 nursing entries, six doctors' entries and nine domestic entries. In another with 37 babies, there were 68 nursing entries, seven doctors' entries, two mothers' entries and two domestic entries. At the third hospital there were 24 babies, and 141 nursing entries, eight doctors' entries, seven others by mothers and three domestic entries. Those present would agree that those actual figures established the size of the contact problem. Any baby discovered to be infectious should be hustled out of the nursery containing healthy babies. Dr. Southby related an anecdote of the attitude of a nurse to the late Dr. Arthur Wilson; in fear and trembling she had confessed to him that without special orders she had put silver nitrate drops into the eyes of a baby because she thought they were sticky; Dr. Wilson had congratulated her on the initiative she had shown, and had told her that he would have been cross with her if she had not done it. Dr. Southby said that during the discussion there had been several references to the "rooming in" system, and asked for the opinions of those who had opened the discussion; obstetricians should apply the acid test of taking into account what their own wives would want when it was their turn to require the services of the midwifery department.

Professor Shedden Adam, in reply, said that he still had an open mind about "rooming in", but he strongly endorsed Dr. Campbell's suggestion of the setting up of a "suspect nursery" in addition to the "infectious" nursery.

Dr. Campbell, in reply, said that silver nitrate drops irritated the eyes of the baby, and though in Victoria it was required by law that silver drops should be used, they were using "Solutox", which was superior but did not contain silver; septic rhinitis was initiated by contamination introduced into the eye if the eyedrops were contaminated. The provision of gloves to minimize hand washing had not been a practical success; they retained the sweat, and the nurses could not close safety pins satisfactorily when wearing them. The question of masking was probably a geographical problem, but in Victoria they could and did use masks. Dr. Campbell approved heartily of "rooming in", which combated the "dehumanizing" process that had developed in later years. It was ideal for the mother to be confined at hospital and to go home on the next day accompanied by a trained nurse; but that was not practicable as a rule because of the nursing shortage. The primiparous woman had a lot to learn; if the baby cried she thought he was going to die, and if he did not cry she poked him to see if he was still alive. Dr. Campbell considered that penicillin as a prophylactic was good when difficulty was encountered in delivering the baby. Miss Rountree was doing useful work, and as she had appealed for specimens, Dr. Campbell took the opportunity of telling her that there was an epidemic of pemphigus which had been going on for many months in a small private hospital in Melbourne; she could easily send her some specimens. Dr. Ian Mackerras had told them about the recovery from the dust of spores of the tetanus bacillus. Dr. Campbell knew of the presence of a baby carrier of Shigella, who was otherwise healthy, but who infected the other occupants of the nursery. She was not impressed with the "Isolette"; the porthole entries would be soiled by contact with the nurses' arms. The oiling of blankets and waxing of floors were to be recommended. Dr. Campbell said that she had had no experience of the efficacy of penicillin aerosols. She was interested to hear of the babies with aniline dye poisoning; perhaps absorption could be stopped by prolonged boiling of the marked linen and diapers. She herself had encountered pink discoloration of the napkin area, especially across the lower part of the abdomen, which disappeared after the free administration of fluids; she had read that vitamin *C* was recommended in the United States of America, but she had satisfied herself that that was not essential. Dr. Campbell said that they all knew of fatal pyæmia from infected nipples or breast abscesses; it was hard to say when mastitis might bring about an entry of infectious material into the milk taken by the baby. She commented on what Dr. Brody had said about the nurses' reaction to "rooming in"; domestic and nursing staffs were conservative, and their normal routine would be seriously upset by the innovation. Finally, Dr. Campbell expressed agreement with Dr. Wait that babies were washed too often. Those under her supervision were oiled at a convenient time after delivery and occasionally in the next few days, and they were given a bath before they went home, which was used as a demonstration to the mother on bathing technique. When bathing was cut down, the liability of skin infection was minimized.

(To be continued.)

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Week-End Course at Wollongong.

THE Post-Graduate Committee in Medicine in the University of Sydney, in conjunction with the Clinical Society of the South Eastern Medical Association, will hold a week-end course at the Wollongong District Hospital on Saturday and Sunday, July 29 and 30, 1950. The programme is as follows:

Saturday, July 29: 2.30 p.m., "Some Functional Aspects of Organic Nervous Disease", Dr. Eric Susman; 3.40 p.m., "Modern Surgery of the Neck", Dr. Frank H. Mills.

Sunday, July 30: 10 a.m., "Peripheral Vascular Disease", Dr. Eric Susman; 11.10 a.m., "Vascular Surgery", Dr. Frank H. Mills; 2 p.m., "Orthopædic Problems in General Practice", Dr. J. Hoets; 3.10 p.m., "New Developments in Ear, Nose and Throat Treatment", Dr. Bernard B. Blomfield.

The fee for the course will be £2 2s. Those wishing to attend are requested to notify Dr. Rawdon T. Suttor, Honorary Secretary, Clinical Society of the South Eastern Medical Association, 60 Kembla Street, Wollongong, as soon as possible.

THE MELBOURNE PERMANENT POST-GRADUATE COMMITTEE.

PROGRAMME FOR AUGUST, 1950.

Gynæcology and Obstetrics Refresher Course for General Practitioners.

A GYNÆCOLOGY and obstetrics refresher course for general practitioners will be conducted at the Women's Hospital, Carlton, from August 14 to 25 inclusive, and will consist of the following lectures and demonstrations.

Gynæcology.

1. Operative demonstrations: (*a*) Manchester operation under local anæsthesia. (*b*) Myomectomy—indications and technique. (*c*) Stress incontinence.

2. Lecture demonstrations: (*a*) Sterility. (*b*) Vault prolapse.

3. Pathological lecture demonstrations arranged by the Department of Pathology.

Obstetrics.

1. Lecture demonstrations: (*a*) Abortion. (*b*) Complications of the third stage of labour. (*c*) Management of difficult labour. (*d*) Management of breech presentation.

(*e*) Toxæmias of pregnancy. (*f*) Daily rounds of labour ward and ante-natal clinic. (*g*) Management of the premature baby. (*h*) Medical obstetrics.

2. Pathological lecture demonstrations arranged by the Department of Pathology.

Ward Rounds and Residence.

Daily ward rounds will be conducted in groups; in these the routine work of the hospital will be demonstrated and taught. Residence at the hospital during the period is advised and will be available. It will be necessary for those attending to have a result from throat-swab examination negative for hæmolytic organisms before commencing the course. These swabs should be taken by the Pathology Department at the Women's Hospital; this can be done on the previous Thursday between 2 and 4 p.m., if convenient.

Fee.

The tuition fee for the course, £10 10s., is payable to the Post-Graduate Committee. The fee for residence, £3 10s. per week, is payable to the hospital.

Country Courses.

Mildura.

A course will be held on August 26 and 27 at the Mildura Base Hospital. The programme is as follows.

Saturday, August 26: 2.30 p.m., Dr. R. Rome, "Toxæmias of Pregnancy"; 4 p.m., Dr. J. Hayward, "Common Chest Diseases Requiring Surgical Treatment".

Sunday, August 27: 10 a.m., Dr. S. Williams, "Antibiotics in Medical Practice" (Professor Francis G. Blake, of Yale University, United States of America, will attend this demonstration and join in the discussion); 2 p.m., Dr. R. H. Orton, "Modern Anæsthesia in General Practice".

The fee for this course is £2 2s., or 10s. 6d. per demonstration. Enrolments may be made with Dr. T. L. Barker, Red Cliffs (telephone 25).

Hamilton.

At Hamilton on Saturday, August 12, at 8.15 p.m., Dr. A. R. Wakefield will lecture on "Tendon Injuries in the Hand", illustrating the lecture with a 16-millimetre colour film. The fee for this lecture is 10s. 6d., and enrolments should be made with Dr. W. R. Angus, Warrnambool, or Dr. S. C. Fitzpatrick, Hamilton.

Flinders Naval Depot.

At Flinders Naval Depot on Wednesday, August 9, at 2.30 p.m., Dr. E. Graeme Robertson will conduct a demonstration on "X-Ray Films of the Skull". This demonstration is by arrangement with the Royal Australian Navy.

Overseas Lecturers.

Professor Donald Hunter, Physician at the London Hospital and Professor of Industrial Medicine, is expected to be in Melbourne from August 6 to 13. He has been asked to lecture on August 8 and 10, at 8.15 p.m., and to conduct ward rounds on other afternoons.

Professor Francis G. Blake, M.D., Professor of Medicine, Yale, United States of America, the post-graduate lecturer for 1950 under arrangement with the Australian Post-Graduate Federation in Medicine, will lecture in Melbourne on Friday, August 18, Tuesday, August 22, and Thursday, August 24, at 8.15 p.m.

Enrolments.

Enrolments for the above courses should be made with the Melbourne Permanent Post-Graduate Committee, 426 Albert Street, East Melbourne (telephone JM 1547).

Training in Practical Radiotherapy.

Dr. R. Kaye Scott has arranged for a series of about ten lectures in radium and radon calculations to commence in Melbourne in the first week of August, 1950. These will be suitable for candidates for Part II of the Diploma of Therapeutic Radiology and Electricity. They will be followed later by lectures on radiation biology, clinical radiation

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JUNE 24, 1950.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.[2]	Tasmania.	Northern Territory.[3]	Australian Capital Territory.	Australia.[3]
Ankylostomiasis	*	..	..	..	..	..	..	..	..
Anthrax	*	..	..	..	..	..	..	..	..
Beriberi	*	*	*	*	*	*	..	*	..
Bilharziasis	*	..	..	..	..	..	..	..	..
Cerebro-spinal Meningitis	1	2(2)	2	1(1)	..	..	..	..	6
Cholera	..	..	..	..	..	..	..	..	..
Coastal Fever(*a*)	*	*	*	*	*	*	*	*	..
Dengue	*	*	*	*	*	*	..	*	..
Diarrhœa (Infantile)	..	..	..	..	..	..	..	..	..
Diphtheria	18(3)	9(5)	5(3)	..	..	1	..	..	33
Dysentery (Amœbic)	*	..	..	..	..	..	..	..	..
Dysentery (Bacillary)	*	1(1)	11(8)	..	..	..	..	..	12
Encephalitis Lethargica	..	..	..	..	..	..	..	..	..
Erysipelas	*	*	1	*	*	..	..	..	1
Filariasis	*	..	..	..	..	..	..	..	..
Helminthiasis	*	..	*	*	*	*	*	*	..
Hydatid	*	*	*	*	..	*	*	..	..
Influenza	*	*	..	..	*	*	..	*	..
Lead Poisoning	*	*	..	*	*	*	*	*	..
Leprosy	..	..	..	..	..	..	..	..	..
Malaria(*b*)	*	..	1	..	..	..	..	..	1
Measles	*	*	*	32(24)	*	*	..	4	36
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	5(2)	5(1)	..	15(14)	..	..	..	..	25
Psittacosis	*	..	*	..	*	*	*	*	..
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella(*c*)	*	*	..	*	..	*	..	1	1
Scarlet Fever	15(8)	17(14)	7(3)	17(5)	..	..	..	..	56
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	*	..	1(1)	*	*	*	*	*	1
Trachoma	*	..	*	*	*	*	*	*	..
Tuberculosis(*d*)	15(9)	15(13)	9(6)	3(2)	..	5(1)	..	..	47
Typhoid Fever(*e*)	..	1(1)	..	..	..	..	..	..	1
Typhus (Endemic)(*f*)	1	..	..	..	..	..	..	..	1
Undulant Fever	..	..	..	..	..	..	..	..	..
Weil's Disease(*g*)	*	*	*	*	*	*	*	*	..
Whooping Cough	*	*	*	2	*	*	..	..	2
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] The form of this table is taken from the *Official Year Book of the Commonwealth of Australia*, Number 37, 1946-1947. Figures in parentheses are those for the metropolitan area.
[2] Figures not available.
[3] Figures incomplete owing to absence of returns from the Northern Territory and Western Australia.
* Not notifiable.
(*a*) Includes Mossman and Sarina fevers. (*b*) Mainly relapses among servicemen infected overseas. (*c*) Notifiable disease in Queensland in females aged over fourteen years. (*d*) Includes all forms. (*e*) Includes enteric fever, paratyphoid fevers and other Salmonella infections. (*f*) Includes scrub, murine and tick typhus. (*g*) Includes leptospiroses, Weil's and para-Weil's disease.

physics and radiotherapy applied to special sites with special reference to physical and pathological problems. It is anticipated that printed lecture notes will be available for the great majority of the lectures being given. The lectures also would be suitable as refresher material for any radiotherapist contemplating sitting for the examinations to be held in Australia next May by the Faculty of Radiologists of London. Inquiries should be directed to the Melbourne Permanent Post-Graduate Committee, 426 Albert Street, East Melbourne (telephone JM 1547).

THE UNIVERSITY OF QUEENSLAND POST-GRADUATE MEDICAL EDUCATION COMMITTEE.

THE University of Queensland Post-Graduate Medical Education Committee announces that Professor Francis G. Blake, M.D., M.A., D.Sc., F.A.C.P., Professor of Medicine, Yale University, United States of America, will lecture at the Medical School, Herston Road, Brisbane as follows:

Wednesday, July 12, 1950: "Present Status of Antibiotic Therapy with Particular Reference to Aureomycin, 'Chloromycetin' and Terramycin."
Thursday, July 13, 1950: "The Diagnostic Value of Liver Biopsy."
Monday, July 17, 1950: "The Use of ACTH and 'Cortisone'."
Wednesday, July 19, 1950: "The Treatment of Meningitis."

All lectures will commence at 8.15 p.m., and members of the medical profession are invited to attend.

Obituary.

MYRIEL WINIFRED BERYL PRINGLE.

WE regret to announce the death of Dr. Myriel Winifred Beryl Pringle, which occurred on June 17, 1950, at Cairns, Queensland.

EDWARD MANSFIELD.

WE regret to announce the death of Dr. Edward Mansfield, which occurred on June 28, 1950, at Southport, Queensland.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Nevell, Thomas Franklin, M.B., 1946 (Univ. Sydney), 18 Churchill Crescent, Cammeray.
Grace, Frederick McGill, M.B., B.S., 1948 (Univ. Sydney), Prince Henry Hospital, Little Bay.

The undermentioned have been elected as members of the Tasmanian Branch of the British Medical Association:

Adams, Audrey Belle, M.B., B.S., 1949 (Univ. Melbourne), Launceston General Hospital, Launceston.
Officer, John Cairns Suetorius, M.B., B.S., 1949 (Univ. Melbourne), Launceston General Hospital, Launceston.
Pawsey, Clarence John Kendall, M.B., B.S., 1949 (Univ. Melbourne), Launceston General Hospital, Launceston.
Slaweska, Valda Doreen, M.B., B.S., 1949 (Univ. Melbourne), Launceston General Hospital, Launceston.

Medical Appointments.

Dr. G. R. West has been appointed honorary consulting physician to the Northfield Wards at the Royal Adelaide Hospital, Adelaide.

Dr. Richard DeGaris Burnard has been appointed honorary assistant radiologist at the Royal Adelaide Hospital, Adelaide.

Dr. A. H. Melville has been appointed Principal Medical Officer and Dr. W. E. C. Langford, Deputy Principal Medical Officer of the Department of Repatriation.

Dr. B. P. McMenamin has been appointed visiting medical officer at Eventide, Sandgate, Queensland.

Dr. B. F. R. Stafford has been appointed director of the Psychiatric Clinic, Brisbane, Queensland.

Dr. J. K. Wilson has been appointed to the division of mental hygiene of the Department of Public Health of New South Wales.

Diary for the Month.

JULY 17.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.
JULY 18.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 19.—Western Australian Branch, B.M.A.: General Meeting.
JULY 20.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 20.—Victorian Branch, B.M.A.: Executive Meeting.
JULY 25.—New South Wales Branch, B.M.A.: Ethics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135 Macquarie Street, Sydney): Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £3 *per annum* within Australia and the British Commonwealth of Nations, and £4 10s. *per annum* within America and foreign countries, payable in advance.